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U. S. DEPARTMENT OF COMMERCE
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BUSINESS AND DEFENSE SERVICES ADMINISTRATION
Charles F. Honeywell, Administrator

OFFICE OF TECHNICAL SERVICES

U. S. DEPARTMENT OF COMMERCE
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BIBLIOGRAPHY OF Technical Reports

Vol. 21, No. 1 January 1, 1954

APPAREL

Capital requirements and operating ratios: The work clothing industry, 1950-51. Pennsylvania. University. Wharton School of Finance and Commerce. Industrial Research Dept. Aug 1953. 45p tables Available from U. S. Dept. of Labor, Bureau of Labor Statistics, Washington 25, D. C. PB 112371

Prepared for the Foreign Operations Administration, Productivity and Technical Assistance Division.
1. Clothing, Work - Manufacture 2. BLS R 26.

Case study data on productivity and factory performance: Knit outerwear (Men's and women's sweaters). U. S. Bureau of Labor Statistics. Jul 1953. 93p photos, diagr, graph, tables Available from U. S. Dept. of Labor, Bureau of Labor Statistics, Washington 25, D. C. PB 112372

Prepared for the Foreign Operations Administration, Productivity and Technical Assistance Division.
1. Sweaters - Manufacture 2. BLS R 40.

CHEMICALS AND ALLIED PRODUCTS

Drugs and Pharmaceuticals

Absorption from nasal mucous membrane: Systemic effect of hyoscine following intranasal administration, by Juergen Tonndorf, Reed W. Hyde, Herman I. Chinn, and James E. Lett. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Sep 1953. 8p photo, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 112052

For determination of the systemic effect of small doses of hyoscine in human subjects, the relative change of saliva production at various time intervals after medication was found to be a sensitive indicator. The hyoscine effect was markedly hindered by neosynephrine given as nose drops immediately before the intranasal instillation of the hyoscine. This appears to explain the lack of systemic effects of vasoconstricting agents when given intranasally they interfere with their own absorption. Because of these results, it is recommended that the attempt be made to use the nasal route for medication of hyoscine in studies on prevention and treatment of motion sickness. Hyoscine has previously been found to be rather effective.

Determination of L-ascorbic acid, and dehydro-L-ascorbic acid plus diketo-L-gulonic acid in microgram quantities of tissue, by David Glick, Morton Alpert, and Helen R. Stecklein. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Aug 1953. 11p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112260

The determination of L-ascorbic acid, and dehydro-L-ascorbic plus diketo-L-gulonic acids in microgram quantities of tissue was described. The procedure used is an adaptation to the micro scale of macro methods based on spectrophotometric measurements of reactions involving 2, 6-dichlorophenol indophenol and 2, 4-dinitrophenylhydrazine, and it is well suited to serial analyses on large numbers of samples because of its relatively great simplicity and speed. Contract no. AF 18(600)169. AAF SAM Proj., Special report.

Effect of stress on the metabolism of ascorbic acid. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Contract no. AF 33(038)-16196. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Part II: Increased excretion of dehydroascorbic and diketogulonic acids by rats after X-ray irradiation, by Mary Mills Monier and Roslyn J. Weiss. Sep 1953. 4p tables Microfilm $1.25, Photostat $1.25. PB 112262

Adult albino rats were exposed to 800 r single-dosetotal body x-ray irradiation. Urinary excretion of dehydroascorbic acid increased 150 percent after irradiation; diketogulonic acid excretion increased 230 percent . The increase in excretion of oxidized ascorbic acid in the urine may be a general response to stress. AAF SAM Proj 21-1208-0001, Report no. 2.

Part III: Changes in tissue levels of ascorbic, dehydroascorbic, and diketogulonic acids in the rat exposed to cold, by Mary Mills Monier, Seymour Byer, and Roslyn J. Weiss. Sep 1953. 4p tables Microfilm $1.25, Photostat $1.25. PB 112263

Adult albino rats were exposed to environmental temperatures of 21°C. for controls and 0° C. for experimentals, for 72 hours prior to sacrifice. The adrenal and kidney tissues of the experimental rats showed no increased levels of AsA, DHA, and DKA in comparison with controls. The liver tissue of the experimental animals had significantly decreased levels of AsA and increased levels of DHA. AAF SAM Proj 21-1208-0001, Report no. 3.

Part IV: Increased excretion of dehydroascorbic and diketogulonic acids in the urine of rats after severe burns, by Mary Mills Monier and Roslyn J. Weiss. Sep 1953. 4p tables Microfilm $1.25, Photostat $1.25. PB 112264

Adult albino rats were burned by immersion in water at 60° C. for 15 seconds. Urinary excretion of dehydroascorbic and diketogulonic acids increased greatly over control values established before burning. AAF SAM Proj 21-1208-0001, Report no. 4.

Influence of hypoxia of lactating rats and mice on the blood of their normal offspring, by Wilson C. Grant. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Aug 1953. 6p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 112366

Lactating rats and mice 3 to 4 days post partum were discontinuously exposed daily to an ambient pressure of 400 to 300 mm. Hg for six hours while their litters remained at sea level pressure. At the same time, control rats and mice were separated from their litters but were kept at sea level pressure. The hematocrit, erythrocyte count, and oxygen capacity values of those nursed by hypoxic mothers were found to be greater than those nursed by the normal mothers. Contract no. AF 33(038)-25899. AAF SAM Proj 21-2301-0005, Report no. 3.

Isolation of cholesterol from tissue extracts by paper chromatography, by Leland L. Smith and Sally J. States. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Sep 1953. 6p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 112368

Isolation of cholesterol from tissue extracts by use of a paper chromatographic system without the preliminary use of digitonin has been effected, nonsterol, non-saponifiable material in the extracts being of slower migration in the system. Cholesterol in 5 to 25 mg amounts may be chromatographed. Elution of the cholesterol from the chromatogram permits radioactivity assay and application of other purification procedures. Contract no. AF 18(600)-303. AAF SAM Proj 21-1601-0007, Report no. 3.

Agricultural Chemicals

Fungicide attenuation by oils, by John M. Leonard and Helen Louise Larson. U. S. Naval Research Laboratory. Oct 1953. 10p graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 111250

The materials studied include tung oil, dehydrated castor oil, linseed oil, coconut oil, soya oil, Crisco, linoleic acid, oleic acid, stearic acid, and myristic acid. NRL R 4228.

Theoretical investigation of the growth of aerosol particles by diffusion. Polytechnic Institute of Brooklyn. Dept. of Chemistry, Brooklyn, N. Y. 1953. 39p diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 112379

The present research was undertaken with the object of deriving approximate laws describing the growth of aerosols from nuclei in supersaturated vapors to droplets suspended in the equilibrium vapor. The present study was mainly concerned with atmospheric water clouds but nearly all of the results obtained are applicable to other aerosols and many of the results are applicable to colloids in general and to general phase growth problems. For 1st report see PB 109107.

Plastics and Plasticizers

Developments concerning aircraft glass fiber plastic laminates, by Gail A. Clark. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Materials Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Jul 1952. 176p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.50, Photostat $22.50. PB 112387

Recent developments concerning aircraft glass fiber plastic laminates for structural and other applications are presented in this report. In particular, de-

velopments and properties of heat resistant, polyester, silicone, and phenolic, laminates are discussed; information on new sizings for glass fibers used in plastic laminates to produce improved strength polyesters, especially wet strength, is presented; progress on development of high strength epoxide laminates is covered; and mechanical properties of glass fiber base plastic laminates as affected by fatigue, preloading, direction of stress, construction of laminates, and defects, are presented. Papers prepared for the Air Force - AIA Conference on Developments Concerning Aircraft Glass Fiber Plastic Laminates, Dec 11-12, 1951. Contents: I. Report on vinyl silane type size, by Johan Bjorksten. - II. Linde silicone X-31S glass sizing, by M. H. Jellinek. - III. Garan finish RS-49, by Robert Steinman. - IV. Owens-Corning 136 finish, by C. E. Bacon. - V. Volan (114) finish, by J. V. P. Torrey. - VI. WADC evaluation of new finishes for glass fibers, by G. A. Clark. - VII. High strength laminates from epon resins, by D. W. Elam and F. C. Hopper. - VIII. Effect of preloading and fatigue on the mechanical properties of glass-cloth plastic laminates, by Allen D. Freas. - IX. Mechanical properties of glass cloth laminates as related to direction of stress and construction of laminates, by Fred Werren. - X. Effects of defects on strength properties of plastic laminates, by B. G. Heebink and A. A. Mohaupt. - XI. Vibrin X-1047, a new heat resistant polyester resin, by P. M. Elliott. - XII. Elevated temperature electrical properties of Vibrin X-1047 laminate, by G. A. Clark. - XIII. Polyester resins for strength retention at 500°F, by H. M. Day and D. G. Patterson. - XIV. High temperature properties of Stypol 16B glass cloth laminates, by F. G. Singleton. - XV. Low-pressure lamination of silicone resins, by Kenneth R. Hoffman. - XVI. Technical data on CTL-91-LD phenolic resins, by Melvin N. Korelitz. AAF WADC TR 52-24.

Ordnance Chemicals

Compatibility of HD and shell grease (Specification MIL-G-20303), by Lawrence C. Buckles and Wiley C. Crawford, Jr. U. S. Chemical Corps. Chemical and Radiological Laboratories, Army Chemical Center, Md. Sep 1953. 8p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 112225

The data show that shell grease does not appreciably affect the storage stability of HD stored in steel. Therefore a small amount of shell grease left on a munition filled with HD will not be detrimental. Project 4-08-03-006. CC CRL R 259.

Chemical Engineering and Equipment

Method for the detection and colorimetric determination of Dowtherm by cleavage of diphenylether to phenol, by Samuel Sass. U. S. Chemical Corps. Chemical and Radiological Laboratories, Army Chemical Center, Md. Sep 1953. 8p drawing Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 112226

Dowtherm, a eutectic mixture of 73.5% diphenyl ether and 26.5% diphenyl, is used as a heat exchanger in plant processes. Since the process for which this work was initiated deals primarily with chlorophosphorus compounds, studies of potential interferences with any Dowtherm method due to the presence of these compounds were also required. Project 4-08-03-006. CC CRL R 246.

Studies of effects of high energy radiation on chemical systems. Illinois. University. Dept. of Chemistry. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Bimonthly progress report no. 1, Jun 15, 1951 to Aug 15, 1951 under Contract no. DA18-108-CML-2446, by G. L. Clark, J. Fuchs, P. E. Bierstedt, and J. O. Gardner. Aug 1951. 6p Microfilm $1.25, Photostat $1.25. PB 112267

Solutions of a number of inorganic complex compounds were exposed to a large dosage of low energy x-radiation. A comparison of the visible and ultra-violet absorption spectra of the solutions taken before and after exposure to x-radiation did not show any change in either the qualitative or quantitative composition of the solutions.

Bimonthly progress report no. 2, Aug 15, 1951 to Oct 15, 1951, under Contract no. DA18-108-CML-2446, by G. L. Clark, J. Fuchs, P. E. Bierstedt, and J. O. Gardner. Oct 1951. 12p Microfilm $1.75, Photostat $2.50. PB 112268

A variety of different types of compounds and reactions were studied in an attempt to discover a few compounds, or classes of compounds, which would be most satisfactory for extensive research on radiation effects. An enumeration of the various preliminary investigations performed are: 1. Investigation of organic fluorine compounds. 2. Investigation of color reactions of indicators on the solidification of organic melts. 3. Investigation of the catalyzed hydrogen peroxide - potassium biphthalate decomposition. 4. Investigation of complex inorganic compounds. 5. Investigation of the cysteine-cystine system.

Bimonthly progress report no. 3, Oct 15, 1951 to Dec 15, 1951 under Contract no. DA18-108-CML-2446, by G. L. Clark, J. Fuchs, P. E. Bierstedt, and J. O. Gardner. Dec 1951. 10p Microfilm $1.25, Photostat $1.25. PB 112269

Three more different types of compounds and reactions were studied in an attempt to discover a few compounds, or classes of compounds, which would be most satisfactory for extensive and prolonged research on radiation effects.

Bimonthly progress report no. 4, Dec 15, 1951 to Feb 15, 1952, under Contract no. DA18-108-CML-2446, by G. L. Clark, P. E. Bierstedt, and J. O. Gardner. Feb 1952. 13p Microfilm $1.75, Photostat $2.50. PB 112270

Three different types of compounds and reactions were studied in an attempt to discover a few compounds or classes of compounds which would be most satisfactory for extensive and prolonged research on radiation effects. An enumeration of these investigations follows: 1. Continued investigation of the formation of α-keto acids from α-amino acids by the action of free radicals in irradiated aqueous solution. 2. Continuous investigation of the effect of x-radiation on aqueous solutions of indole. 3. Investigation of the methods of detecting hydrogen peroxide formed in irradiated aqueous solutions.

Bimonthly progress report no. 5, Feb 15, 1952 to Apr 15, 1952, under Contract no. DA18-108-CML-2446, by G. L. Clark, P. E. Bierstedt, and J. O. Gardner. Apr 1952. 19p Microfilm $1.75, Photostat $2.50. PB 112271

Several new investigations begun, as follows: (1) α-keto acids and aldehydes from α-amino acids, including a new critical study of the ammoniacal silver test for aldehydes; (2) detection of H_2O_2 in irradiated aqueous systems by means of phenolphthalin and the very sensitive $Ni_2O_3 + BaSO_4$, (3) organic free radicals of the triphenylmethane type; (4) the production of CO (or CO_2) from acetaldehyde free radicals; (5) the decomposition of benzothiazolines, with very promising reactions at a mercury-solution interface at 1000 r or below; (6) the two-step color changes in resazurin in agar solution (already successful for cathode ray detection); (7) a quantitative study at dosages of 1-15r or oxidation of indole with discovery of extreme sensitivity to various factors; (8) renewed study of H_2S evolution from regenerated keratin and its detection by Hg and Ag; (9) projected experiments on ruthenium red-pectin and the chain reaction oxidation of dimethylbenzofulvene.

Bimonthly progress report no. 6, Apr 15, 1952 to Jun 15, 1952, under Contract no. DA18-108-CML-2446, by G. L. Clark, P. E. Bierstedt, and J. O. Gardner. Jun 1952. 20p drawing Microfilm $1.75, Photostat $2.50. PB 112272

Further progress in researches is reported for several systems namely α-amino acids and ammoniacal silver; pectin-ruthenium red complex; regenerated, partly hydrolyzed keratin; indole $\rightarrow$ indoxyl; resazurin; benzathiazoline-carbohydrate complexes. An apparatus has been built and is in successful use in which these systems and others can be handled and irradiated in controlled atmospheres.

Miscellaneous Chemicals

Lithium fluoride thermoluminescent dosimeter. Progress report no. 4 under Contract no. DA18-108-CML-3069, by Farrington Daniels and William P. Riemen. Wisconsin. University. Dept. of Chemistry. Jul 1953. 11p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112363

1. Lithium fluoride - Thermoluminescence
2. Dosimeters.

Spray drying of octal, by W. D. Mohr and R. H. Reuther. U. S. Chemical Corps. Chemical and Radiological Laboratories, Army Chemical Center, Md. Sep 1953. 55p photos, drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 112356

The object of the work described in this report was to conduct engineering tests on a spray drier for drying octal. The purposes of the tests were to determine the feasibility of using a plant-scale spray drier for drying octal to specification and to obtain data for the design of spray-drying units. Project 4-72-06-003. Job 504. CC CRL R 223.

ELECTRICAL MACHINERY

Communication Equipment

Investigation of radio receiver noise reducing circuitry. Lightning and Transients Research Institute, Minneapolis, Minn. Under Contract AF 18(600)-74. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Part 1. 3d interim report, III-1, Dec 1951-Feb 1952, by M. M. Newman, J. R. Stahmann, R. C. Schwantes. Apr 1952. 24p photos, diagrs Microfilm $2.00, Photostat $3.75. PB 112347

The work in this phase of the contract is directed toward the investigation of the properties of receiving circuits which are important to the possible suppression or rejection of precipitation and atmospheric static interference and to determine what types of circuits will be most effective in radio noise reduction. Description of the proposed overall design and construction is given together with the details of several units which have already been constructed. LTRL T 203.

Part 2. 6th Interim report, III-2, Apr 1952-Jun 1952, by M. M. Newman and J. R. Stahmann. Jul 1952. 24p diagrs, graphs Microfilm $2.00, Photostat $3.75. PB 112350

Appendix I: Reduction of intermodulation distortion by use of inverse feedback, by J. R. Stahmann. - Appendix II: Comparison of effects of RF tuned stages on a noise pulse and a modulated signal, by M. M. Newman and J. B. Roberts.
1. Radio receivers - Noise 2. Circuits, Noise suppression 3. Mathematical equations and solutions 4. Pulse communication - Theory 5. LTRL T 221.

Part 3. 9th Interim report, III-3, Jul 1952-Sep 1952, by M. M. Newman and J. R. Stahmann. Oct 1952. 22p photos, diagrs, graphs Microfilm $2.00, Photostat $3.75. PB 112352

Appendix I. Corona interference reduction by polarity discrimination, by M. M. Newman. - Appendix II. Effect of a wide-band preamplification section on the noise figure of an amplifier, by J. R. Stahmann.
1. Radio receivers - Noise 2. Circuits, Noise suppression 3. Corona discharges 4. Interference, Electrical - Elimination 5. Amplifiers, Wide-band - Noise 6. LTRL T 239.

Phase 4, cascaded and differential LSE networks. 12th Interim report, III-4, Oct 1952-Dec 1952, by M. M. Newman. Jan 1953. 23p photos, diagrs, graphs Microfilm $2.00, Photostat $3.75. PB 112354

1. Radio receivers - Noise 2. Circuits, Noise suppression 3. Interference, Electrical - Elimination 4. Networks, Electrical - Limited shock excitation 5. LTRL T 244.

Ionosphere studies. Pennsylvania State College. Dept. of Electrical Engineering, State College, Pa. Under Watson contract no. W28-099-ac-143. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Progress report no. 16, covering period Dec 1, 1947 to Jan 31, 1948, by A. H. Waynick. 1948. 50p photos, graphs Microfilm $2.50, Photostat $6.25. PB 112149

Includes Ultra-short-wave propagation studies beyond the horizon, by A. H. Waynick (Reprinted from Proceedings of the Institute of Radio Engineers, vol. 35, no. 11, Nov 1947). Appendix A. Auroral region radio wave propagation measurements, the "Churchill experiment," Feb 5, 1948. - Appendix B. Detection of long range missiles, by P. G. Sulzer, Jan 27, 1948. - Appendix C. Summary of the WWV field strength records, Oct-Nov 1947 and Dec 26-28, 1947.
1. Ionosphere - Research 2. Radio waves - Propagation - Ionospheric 3. Missiles, Long range - Detection 4. Radio fields - Intensity.

Progress report no. 19 covering period Aug 1, 1948 to Oct 31, 1948, by A. H. Waynick. 1948. 89p diagrs, graphs Microfilm $3.75, Photostat $11.25. PB 112150

Appendix A. Summary of WWV field strength records, June, July, Aug 1948. - Appendix B. Tabulation of WWV fade-outs as recorded at State College, Pa., June, July, Aug 1948. - Appendix C. Status report on instrumentation for oblique-incidence experiment to be performed with CRPL, by P. G. Sulzer. - Appendix D. Interim report on the calculations of the propagation of a radio wave in a curved ionosphere, by J. M. Kelso. - Appendix E. Preliminary report on the M.U.F. and vertical incidence absorption including the Lorentz polarization term, by J. M. Kelso. - Appendix F. Note on the ionosphere absorption problem, by Leslie G. McCracken. - Note on the phase difference between two waves reflected from the ionosphere, by J. M. Kelso (Reprinted from Journal of Applied Physics, vol. 19, no. 6, p. 590-591, Jun 1948). - Approach to the approximate solution of the ionosphere absorption problem, by James E. Hacke, Jr. (Reprinted from the Proceedings of the Institute of Radio Engineers, vol. 36, no. 6, p. 724-727, June 1948). - Restricted-range sky-wave transmission, by J. E. Hacke, Jr. and A. H. Waynick (Reprinted from Proceedings of the Institute of Radio Engineers, vol. 36, no. 6, p. 787-793, June 1948). - RF spectrum analyzer, by Peter G. Sulzer (Reprinted from Tele-Tech Jul 1948). - Applications of screen-grid supply impedance in pentodes, by Peter G. Sulzer (Reprinted from Communications, Aug 1948). - Cathode-coupled negative-resistance circuit, by Peter G. Sulzer (Reprinted from Proceedings of the Institute of Radio Engineers, vol. 36, no. 8, p. 1034-1039, Aug 1948).
1. Ionosphere - Research 2. Ionosphere - Absorption 3. Radio waves - Propagation - Ionospheric 4. Polarization, Atmospheric - Theory 5. Spectrum analyzers (RF) 6. Circuits, Negative-resistance.

Progress report no. 20 covering period Nov 1, 1948 to Jan 31, 1949, by A. H. Waynick. 1949. 88p photos, diagrs, graphs, fold table Microfilm $3.75, Photostat $11.25. PB 112151

Appendix A. Summary of WWV field strength records, Sept-Nov 1948. - Appendix B. Tabulation of WWV fade-outs as recorded at State College, Pa., Sep-Nov 1948. - Appendix C. Experimental determination of scale height and layer height, by John M. Kelso. - Appendix D. Effect of the Lorentz polarization term on the vertical incidence absorption in a deviating ionosphere layer, by J. M. Kelso. - Appendix E. Summary of E-region studies, by P. G. Sulzer, Dec 1948. - Continuous oscillograph camera for ionosphere measurements, by James E. Hacke, Jr. (Reprinted from Instruments, vol. 21, no. 10, Oct 1948). - Hermetically sealed electronic components, by W. J. Leiss, G. R. Moltrup, J. H. Slaton and A. H. Waynick (Reprinted from Electronics, Nov 1948, p. 80-82). - Tapered phase shift oscillator, by Peter G. Sulzer (Reprinted from Proceedings of the Institute of Radio Engineers, vol. 36, no. 10, Oct 1948, p. 1302-1305).
1. Ionosphere - Research 2. Cameras, Oscilloscopic 3. Electronic equipment - Design 4. Polarization - Theory.

Final report covering period Feb 1, 1949 to Apr 30, 1949, by A. H. Waynick. 1949. 118p photos, diagrs, graphs, table Microfilm $4.75, Photostat $15.00. PB 112152

Pt. 2 covers Jul 1, 1946-Apr 30, 1949. Combined with Project W28-099-ac-208 under Contract no. AF 19(122)-44. Contents: Appendix A. Summary of WWV field strength records Dec 1948. - Appendix B. Tabulations of WWV fadeouts as recorded at State College, Pa., Dec 1948, Jan, Feb 1948. - Approximate solution of the problem of path and absorption of a radio wave in a deviating

ionosphere layer, by James E. Hacke, Jr. and John M. Kelso (Reprinted from Proceedings of the Institute of Radio Engineers, vol. 36, no. 12, Dec 1948, p. 1477-1481. - Wide-range saw-tooth generation, by Peter G. Sulzer (Reprinted from Review of Scientific Instruments, vol. 20, no. 1, p. 78-80, Jan 1949). - Predicting maximum usable frequency from long-distance scatter, by Arthur H. Benner (Reprinted from Proceedings of the Institute of Radio Engineers, vol. 37, no. 1, Jan 1949, p. 44-47). - Sweep frequency ionosphere equipment, by Peter G. Sulzer (Reprinted from Journal of Applied Physics, vol. 20, no. 2, p. 187-196, Feb 1949). - Receiver gain nomograph, by Peter G. Sulzer (Reprinted from Electronics, Apr 1949, p. 122).
1. Ionosphere - Research 2. Ionosphere - Measuring equipment 3. Generators, Saw-tooth - Design 4. Nomograms 5. Radio Waves - Absorption 6. Recorders, Sweep frequency.

Physical characteristics of the lower E-region as deduced from the measurement of changes in phase path of long radio waves, by Robert E. Jones. Pennsylvania State College. Ionosphere Research Laboratory, State College, Pa. Aug 1953. 91p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.25, Photostat $12.50. PB 112375

An electron density model, moderately "sharp" on the lower side, is evolved by modification of the German theory to include the effects of variable scale height, dissociation of molecular oxygen, and variable recombination. This model is checked, primarily, against 150 kc phase height data, but also against 2.4 mc phase heights, height of maximum ionization, and critical frequency results. The comparison of periods of oscillation in phase with fading periods is shown to bear out the theoretical work on the ionospheric diffracting screen. Contract no. AF 19(122)-44. PSC IRL SR 48.

Electronics

Considerations of equal energy pattern over curved earth, by A. S. Dunbar. U. S. Naval Research Laboratory. Jul 1948. 30p diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 112000

Elevation pattern of shaped-beam antenna for airborne navigational radar system over the curved earth is shown to be equal to energy pattern of flat earth multiplied by correction factor. This correction factor can be expressed in power series involving ascending powers of the altitude. Computations for various altitudes are given an antenna patterns required are plotted. NRL R 3321.

Development and application of automatic assembly techniques for miniaturized electronic equipment. Stanford Research Institute, Stanford, Calif. SRI project no. 597, Contract no. AF 18(600)-141. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Phase II. Interim engineering report no. 2 covering period 1 May 1952 to 31 July 1952, by E. R. Gamson, F. M. Hom, L. K. Lee, R. F. Newton. Aug 1952. 56p drawings (part fold), diagrs, graphs, table Microfilm $2.75, Photostat $7.50. PB 112384

1. Electronic equipment - Miniaturization 2. Assembling methods 3. SRI Proj 597, Report no. 2.

Phase II. Interim engineering report no. 3 covering period 1 Aug 1952 to 31 Oct 1952, by E. R. Gamson, F. M. Hom, R. F. Newton. Nov 1952. 32p photos, fold drawing, table Microfilm $2.25, Photostat $5.00. PB 112385

The program is concerned with the evaluation and development of packaging design and materials processing techniques suitable for mechanized fabrication of electronic assemblies. SRI Proj 597, Report no. 3.

Project Tinkertoy: Modular design of electronics and mechanized production of electronics. U. S. National Bureau of Standards. Order separate volumes described below from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C., giving PB number for each volume ordered.

Volume I: Project Tinkertoy: Modular design of electronics and mechanized production of electronics. 1953. Mimeo: $2.00. PB 111275

Summary description of MDE and MPE including background information, discussion of machines, concepts; includes up to 20 photographs and a selected list of references on printed circuits and related subjects.

Volume III: Hand fabrication technique and photographic processing for modular design of electronics. 1953. Mimeo: $2.00. PB 111277

Describes the various operations associated with a model shop (which are directly related to manual production of MDE). Photographic processing is described completely. 35 illustrations. Blueprints of the drawings referred to in vol. III are deposited at the Library of Congress and prices of photoreproductions can be furnished upon request.

Miscellaneous

Analysis and measurement of antenna parameters. Interim engineering report, period ending 30 Jun

1951, section 2: Antenna polarization parameters, by Thomas E. Tice and Leo C. Bennett. Ohio State University Research Foundation. Antenna Laboratory, Columbus, Ohio. Jun 1951. 21p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109018

Determines what parameters can be measured to define the performance of elliptically polarized antennas, and to summarize the theoretical relations for power transfer in the transmission and reception of elliptically polarized waves. Contract W33-038-ac-16520. Project report 301-32.

Certain transmission and reflection theorems, by Vic Twersky. New York University. Washington Square College of Arts and Science. Mathematics Research Group. Jul 1953. 12p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112220

Research report no. EM-54. Contract no. AF-19-(122)-42.
1. Waves, Electromagnetic - Reflection - Theory
2. Waves, Electromagnetic - Scattering - Theory
3. Mathematical equations and solutions.

Development of lightning protective methods and related radio-interference reduction for aircraft. Lightning and Transients Research Institute. Minneapolis, Minn. Under Contract no. AF 18(600)-74. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

2nd report. 4th Interim report, I-2, Feb 1952-Apr 1952, by M. M. Newman and J. D. Robb. May 1952. 31p photos, drawings, diagrs Microfilm $2.25, Photostat $5.00. PB 112348

Appendix I: Aircraft radio lightning protector specification (tentative).
1. Airplanes - Lightning protection 2. Lightning protectors - Design 3. Radio interference - Aircraft 4. LTRL T 212.

4th report. 10th Interim report, I-4, Aug 1952-Oct 1952, by M. M. Newman and J. D. Robb. Nov 1952. 27p photos, diagrs Microfilm $2.00, Photostat $3.75. PB 112353

Appendix I: Outline report of conference on lightning protection for aircraft wing or fin cap type MHF antenna systems.
1. Airplanes - Lightning protection 2. Radio interference - Aircraft 3. Antennas, Aircraft - Lightning protection 4. Lightning arresters 5. LTRL T 242.

Diffraction by a tipped wedge, with applications to blunt edges, by Sam Karp. New York University. Washington Square College of Arts and Sciences. Mathematics Research Group. May 1953. 24p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 112142

The problem of the diffraction of electromagnetic waves by a cylindrically tipped perfectly conducting wedge under wave or line source excitation is treated. Series representations of the solutions are obtained in all cases in terms of the eigenfunctions of the simple wedge problem (where the radius of the cylindrical tip is zero). The far field expressions for the case of the cylindrically tipped wedge under plane wave excitation are obtained for both polarizations. Graphs of the net scattered amplitude are given for the special case of normal incidence on a half-plane. Research report no. EM-52. Contract no. AF-19(122)-42.

Diffraction of pulses by parabolic cylinders and paraboloids of revolution, by Irvin Kay. New York University. Washington Square College of Arts and Science. Mathematics Research Group. Jun 1953. 23p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 112219

Research report no. EM-53. Contract no. AF 19(122)-42.
1. Diffraction - Theory 2. Waves, Electromagnetic - Diffraction - Theory 3. Mathematical equations and solutions.

Investigation of the distribution of current on collinear parasitic antenna elements, by Richard M. Hatch, Jr. Stanford Research Institute. Aircraft Radiation Systems Laboratory, Stanford, Calif. Aug 1952. 19p photos, drawing, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112383

Measurements of amplitude and phase of current on collinear parasitic antennas have been made using a complementary antenna system consisting of a thin slot in a conducting sheet. Results are presented for cases in which both the length and spacing of the elements are varied. The apparatus is briefly described, and the results of measurements made on special cases are compared to the theory and also to those results obtained by other experimenters. Contract no. AF 19(604)-266. SRI project no. 591, Technical report no. 28.

Low-frequency propagation in an exponential ionospheric layer, by J. Shmoys. New York University. Washington Square College of Arts and Sciences. Mathematics Research Group. Apr 1953. 22p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 112141

The case treated here is that of vertical incidence, oblique magnetic field, and both low and high collision frequency. Research report no. EM-51. Contract no. AF-19(122)-42.

FOOD AND KINDRED PRODUCTS

Storage of ware potatoes in Great Britain, by W. G. Burton. Gt. Brit. Dept. of Scientific and Industrial Research. Food Investigation Board. 1953. 16p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.25. PB 112317

S. O. code no. 47-156-16.
1. Potatoes - Storage - Gt. Brit. 2. DSIR RI L 16.

FUELS AND LUBRICANTS

Fuel conservation. Report of a visit to the U. S. A. in 1952 of a specialist team on the conservation of fuel, heat and energy. Anglo-American Council on Productivity. Sep 1953. 120p photos, drawings, diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.25. PB 106480

1. Fuels - Conservation 2. Heat - Conservation.

Hydrocarbon and nonhydrocarbon derivatives of cyclopropane, by Vernon A. Slabey, Paul H. Wise and Louis C. Gibbons. U. S. National Advisory Committee for Aeronautics. 1953. 20p drawings, graphs, tables Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C. $.20. PB 112373

The methods used to prepare and purify 19 hydrocarbon derivatives of cyclopropane are discussed. Of these hydrocarbons, 13 were synthesized for the first time. The melting points, boiling points, refractive indices, densities, and, in some instances, heats of combustion of both the hydrocarbon and nonhydrocarbon derivatives of cyclopropane were determined. These data and the infrared spectrum of each of the 34 cyclopropane compounds are presented. NACA 1112.

HIGHWAYS AND BRIDGES

Determination of the stiffness factors of the upper chord of a continuous pony truss bridge, by Dale R. Carver and Norman Walter Hanson. Kansas. Engineering Experiment Station, Manhattan, Kansas. Jun 1953. 24p photos, tables Available from Engineering Experiment Station, Kansas State College, Manhattan, Kansas. PB 112301

Kansas State College Bulletin, vol. 37, no. 6, June 1, 1953.
1. Bridges - Load distribution 2. Bridges - Supports 3. K EES B 68.

Research needed in geometric highway design, by D. W. Loutzenheiser. Presented at the thirty-second annual meeting, January 13-16, 1953. Highway Research Board. 1953. 52p Available from Highway Research Board, National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. $.75. PB 112361

National Research Council. Publication 277.
1. Roads - Research 2. Roads - Construction 3. HRB SR 12 4. NRC 277.

Survey of some mixing plants for asphalt and coated macadam, by D. B. Waters. Gt. Brit. Dept. of Scientific and Industrial Research. Road Research Laboratory, Harmondsworth, England. Jun 1953. 52p photo, drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 112315

S. O. code no. 47-110-27.
1. Road materials - Mixing plants - Gt. Brit. 2. Roads - Surface treatment - Bitmuinous materials - Mixing plants - Gt. Brit. 3. Asphalt - Mixing plants - Gt. Brit. 4. Bitumen-tar mixtures - Plants - Gt. Brit. 5. DSIR RR TP 27.

INSTRUMENTS

Application of an electro-optical two-color pyrometer to measurement of flame temperature for liquid oxygen - hydrocarbon propellant combination, by M. F. Heidmann and R. J. Priem. U. S. National Advisory Committee for Aeronautics. Oct 1953. 39p photos, diagrs, graphs Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112259

The development of an electro-optical two-color pyrometer and its application to the measurement of temperature and emissivity in the exhaust gases of an open-tube combustor during normal and oscillatory combustion are described. The results of simultaneous measurements of sound intensity and temperature by the two-color method and by a microwave absorption technique are also presented. NACA TN 3033.

Digidop, an automatic assessor for reflection Doppler radar, by D. W. Kean. U. S. Naval Ordnance Test Station, Inyokern, Calif. Oct 1951. 66p photos, diagrs (1 fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photostat $8.75. PB 112308

In this report the author discusses the development of a device, which has been named the digidop, for the automatic reduction of reflection Doppler radar data. The raw Doppler data are recorded in the field on a magnetic tape along with a suitable time-base frequency. In the laboratory this tape is

played back, through an automatic tracking filter, to the assessor, which modifies the data for punching IBM cards. The reduced data have a minimal accuracy of +0.1 percent of the velocity value. NAVORD 1924. NOTS 452.

Computer components fellowship no. 347. Mellon Institute of Industrial Research, Pittsburgh, Pa. Under Contract no. CLN AF 19/122/-376. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Quarterly report no. 10, Jan 11, 1953 to Apr 10, 1953. Apr 1953. 70p photos, diagrs, graphs, table Microfilm $3.00, Photostat $8.75. PB 110761

For 1st-6th, 11th reports see PB 109935-109940, 108646, 110930. Contents: I. Design of nonlinear resistor function switches, by F. A. Schwertz and R. T. Steinback. - II. Bistable optical elements, by A. Milch. - III. Saturable reactors as gates, by Burnham Moffat. - Appendix A. Determination of output voltage of a saturable transformer under constant-current excitation. - Appendix B. Calculation of B and H in toroidal cores.
1. Computers, Digital - Components 2. Computers, Digital - Design 3. Computers, Digital - Optical elements 4. Switches, Electronic - Design 5. Gates, Magnetic - Materials 6. Transformers, Saturable.

Quarterly report no. 11, Apr 11, 1953 to Jul 10, 1953. Jul 1953. 133p photo, diagrs, graphs, tables Microfilm $5.50, Photostat $17.50. PB 110930

Contents: I. Design of nonlinear resistor function switches, by F. A. Schwertz and R. I. Steinback. - II. Nonlinear semiconductor resistors, by F. A. Schwertz and J. J. Mazenko. - III. Bistable optical elements, by A. Milch. - IV. Saturable transformers as gates, by Burnham Moffat. - Appendix: Determination of output voltage of a saturable transformer under constant-current excitation. - V. Printed circuitry via zerography, by Martin Haller. - VI. Electroluminescence, by L. George Lang. - VII. Electrical and optical properties of silicon carbide, by Wayne U. Sines, Jr.
1. Computers, Digital - Components 2. Computers, Digital - Design 3. Computers, Digital - Optical elements 4. Circuits, Electronic - Printed 5. Circuits, Gate 6. Resistors, Nonlinear - Use in digital computers 7. Transformers, Saturable 8. Silicon carbide - Electrical properties 9. Silicon carbide - Optical properties.

Instrumentation for the measurement of coupling phenomena at 150 kc/s and preliminary results, by R. K. Parkinson. Pennsylvania State College. Ionosphere Research Laboratory, State College, Pa. Aug 1953. 60p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 112266

A method is outlined which is designed to permit detailed investigation of coupling phenomena, using pulsed 150 kc/sec radio signals vertically incident upon the ionosphere. The equipment is described in detail, and circuit diagrams and photographs are shown. Sample records are presented and a summary of preliminary results on the diurnal characteristics of both main and coupling echoes is given in graphical form. Examples of continuous results obtained over short periods of time are included. Contract no. AF 19(122)-44. PSC IRL SR 47.

Maximum evaporation rates of water droplets approaching obstacles in the atmosphere under icing conditions, by Herman H. Lowell. U. S. National Advisory Committee for Aeronautics. Oct 1953. 56p diagr, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112195

1. Ice formation - Mathematical analysis 2. Ice prevention 3. Drops, Liquid - Evaporation - Theory 4. Atmosphere - Moisture content - Mathematical analysis 5. Mach number - Effect 6. Meteorology, Aeronautical - Theory 7. U. S. Lewis Flight Propulsion Laboratory, Cleveland, Ohio 8. NACA TN 3024.

New tephigram, by Walter J. Saucier and William P. Elliott. Scientific report no. 1 under Contract AF 19(604)-559. Texas. Agricultural and Mechanical College. Dept. of Oceanography, College Station, Texas. Sep 1953. 29p diagrs (1 col. fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 112380

The objectives of this report are defined and discussed. A brief discussion of some of the various types of thermodynamic charts follows and reasons for the choice of the type of tephigram constructed are presented. The chart itself is described and some of the features emphasized. A discussion of adiabatic changes of state and some of their related thermodynamic quantities are briefly considered in their relation to the chart. The appendix contains two tables which can be used in conjunction with the chart.

Proceedings of the Western Computer Conference held by the joint IRE-AIEE-ACM Computer Conference Committee, Los Angeles, Calif., Feb 4-6, 1953. Sponsors: Institute of Radio Engineers Professional Group of Electronic Computers, American Institute of Electrical Engineers Committee on Computing Devices, Association for Computing Machinery. Jun 1953. 231p photos, drawings, diagrs, graphs, tables Available from Institute of Radio Engineers, 1 E. 79th St., New York 21, N. Y. $3.50. PB 112084

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Contents: Impact of computer development on the training and utilization of engineers, by Simon Ramo (Abstract). - Factors influencing the effective use of computers, by R. D. Huntoon (Notes on talk). - Scientific manpower problems, by Lee A. DuBridge (Summary). - New equations for management, by

J. E. Hobson. - Session III: Panel discussion. An evaluation of analog and digital computers. - Commercial applications: The implication of Census experience, by J. L. McPherson. - Payroll accounting with Elecom 120 computer, by R. F. Shaw. - Automatic data processing in larger manufacturing plants, by M. E. Salveson and R. G. Canning. - Requirements of the Bureau of Old-Age and Survivors Insurance for electronic data processing equipment, by E. E. Sticknell. - Processing of information-containing documents, by G. W. Brown and L. N. Ridenour. - Airplane landing gear performance solutions with an electronic analog computer, by D. W. Drake and H. W. Foster. - Equivalent circuits of shells used in airframe construction, by R. H. MacNeal. - Analog-digital techniques in autopilot design, by W. T. Hunter and R. L. Johnson. - Applications of computers to aircraft dynamic problems, by B. Hall, R. Ruthrauff and D. Dill. - Snapping dipoles of ferroelectrics as a memory element for digital computers, by C. F. Pulvari. - Magnetic reproducer and printer, by J. C. Sims, Jr. - Improved cathode ray tube storage system, by R. Thorensen. - Nonlinear resistors in logical switching circuits, by F. A. Schwertz and R. T. Steinback. - New laboratory for three-dimensional guided missile simulation, by Louis Bauer. - New concept in analog computers, by Lee Cahn. - Magnetically coupled low-cost high-speed shaft position digitizer, by A. J. Winter. - Solution of partial differential equations by difference methods using the electronic differential analyzer, by R. M. Howe and V. S. Haneman. - Nordsieck computer, by Arnold Nordsieck.
1. Computers - Congresses 2. Computers, Analog 3. Computers, Digital 4. Computers - Uses 5. Resistors, Nonlinear - Use in digital computers 6. Analyzers, Differential 7. Equations, Differential 8. Data storage systems.

Research on point-contact field-controlled semiconducting devices. Battelle Memorial Institute, Columbus, Ohio. Under Contract no. AF 33(038)-23704. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

First interim engineering report for the period Jun 11, 1951 to Sep 11, 1951, by C. S. Peet, R. C. Sirrine, O. J. Mengali, and A. E. Middleton. Nov 1951. 30p diagrs, graphs Microfilm $2.00, Photostat $3.75. PB 112036

Fieldistors depend upon a number of factors for their operation. In this first report, in addition to giving experimental results, an attempt is made to enumerate the factors affecting the action of fieldistors. The control of these factors is discussed and a research program outlined.

Fourth interim engineering report for the period Mar 11, 1952 to Jun 11, 1952, by R. C. Sirrine, C. S. Peet, and A. E. Middleton. Jul 1952. 35p photo, drawings, diagrs, graphs, tables Microfilm $2.25, Photostat $5.00. PB 112037

The major portion of work during this interim was concerned with gaining control of many variables affecting fieldistor action. In particular, pure germanium was prepared and doped with known amounts of impurities, the doped germanium was given several surface treatments, and the fieldistor effect was studied for each type of surface treatment. Other electrical properties of the germanium, such as resistivity, Hall constant, and rectification characteristics, were studied also on most samples.

Sixth interim engineering report for the period Sep 11, 1952 to Dec 11, 1952, by W. E. Bulman, C. S. Peet, O. J. Mengali, and A. E. Middleton. Feb 1953. 40p graphs, tables Microfilm $2.25, Photostat $5.00. PB 112038

The major portion of the work performed during this interim was directed toward attempting to correlate further the bulk and surface properties of germanium with the observed fieldistor action. The effects on fieldistor action of metallographic polishing and electrolytic etching of the germanium surface were investigated.

Seventh interim engineering report for the period Dec 11, 1952 to Mar 11, 1953, by W. E. Bulman, C. L. Hanks, C. S. Peet, and A. E. Middleton. Apr 1953. 44p diagrs, graphs, tables Microfilm $2.50, Photostat $6.25. PB 112039

The major portion of the work performed during this interim was directed to correlating the bulk and surface properties of germanium with observed fieldistor action. The effects of environmental conditions on the observed fieldistor characteristics were investigated.

Results of rocket flights, Luxembourg equipment, common power supply installation, voltage correction. Progress report 8 (Final report) under Contract W28-099-ac-293 for the period 20 Feb 1949 to 31 Aug 1949. Tufts College. Dept. of Electrical Engineering, Medford, Mass. 1949. 78p photos, diagrs (part fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.50, Photostat $10.00. PB 112205

For reports 6/7 see PB 112204.
1. Rockets, Upper air - Equipment 2. Luxembourg equipment 3. Blossom IV-C (Rocket) 4. Rockets, Upper air - Power supply 5. Rockets, Upper air - Timing systems 6. Rectifiers, High voltage.

Solar X-radiation. Baird Associates, Inc., Cambridge, Mass. Under Contract W19-122-ac-23. J. O. 5040. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Interim report no. 3 covering period from September 16, 1948 to March 1, 1950, by R. O'B. Carpenter. Mar 1950. 18p drawings, tables Microfilm $1.75, Photostat $2.50. PB 112212

1. Solar radiation - Measurement 2. Filters, X-ray - Protection 3. X-rays - Detection

4. Radiation counters - Design 5. BT filters (X-ray) 6. Rockets, Upper air - Equipment.

Interim report no. 4 covering period from March 1, 1950 to May 1, 1950, by R. O'B. Carpenter. May 1950. 18p graphs Microfilm $1.75, Photostat $2.50. PB 112213

Includes Report on the X-ray continuum, by R. O'B. Carpenter.
1. Solar radiation - Measurement 2. Filters, X-ray - Protection 3. X-rays - Detection 4. Radiation counters - Design 5. BT filters (X-ray) 6. X-rays - Intensities - Measurement 7. Rockets, Upper air - Equipment.

Interim report no. 7 covering the period from October 1, 1950 to December 31, 1950, by R. O'B. Carpenter. Dec 1950. 12p tables Microfilm $1.75, Photostat $2.50. PB 112214

1. Solar radiation - Measurement 2. Filters, X-ray - Protection 3. X-rays - Detection 4. Radiation counters - Design 5. BT filters (X-ray) 6. Rockets, Upper air - Equipment.

Study of methods for measuring large changes in gravity on an inter-continental basis. Final report under Contract no. AF 19(122)-234, by George P. Woollard, William E. Bonini, William A. Black, John C. Rose, Wayne Ault. Woods Hole Oceanographic Institution, Woods Hole, Mass. Aug 1953. 154p maps, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.00, Photostat $20.00. PB 112377

Reference no. 53-36.
1. Gravity - Measurement 2. Gravimeters - Calibration 3. Pendulums.

Study of transient hot-wire response in a shock tube, by Darshan S. Dosanjh, Leslie S. G. Kovasznay, Patricia C. Clarken. Johns Hopkins University. Dept. of Aeronautics, Baltimore, Md. Mar 1952. 61p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photostat $8.75. PB 112309

The transient response of a hot wire exposed to a sudden finite change in flow conditions (mass flow, temperature) in a shock tube is presented. The technique of predicting the proper electronic compensations for thermal lag under different operating conditions of the hot wire is treated and experimentally verified. An attempt is also made to demonstrate that the hot-wire technique can be successfully used for the measurement of sudden mass-flow change and simultaneous change in stagnation temperature. Contract NOrd 8036. CM-725. Appendix A. Hot wire theory - Appendix B. One-dimensional shock-tube theory.

LUMBER AND WOOD PRODUCTS

Use and manufacture of wood flour, by L. Reynolds. Gt. Brit. Forestry Commission. 1953. 5p table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.15. PB 112318

S. O. code no. 71-12-21.
1. Forests and forestry - Gt. Brit. 2. Forest products - Research - Gt. Brit. 3. Wood waste - Utilization - Gt. Brit. 4. Sawdust - Uses - Gt. Brit. 5. FC FR 21.

MACHINERY

Heat transfer and pressure drop data for circular cylinders in ducts and various arrangements, by W. Robinson, L. S. Han, R. H. Essig, C. F. Heddleson. Ohio State University Research Foundation, Columbus, Ohio. Sep 1951. 101p photo, drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photostat $13.75. PB 112401

Heat transfer and pressure drop relationships of cylinders in ducts with air flow normal to the axis, are presented for air velocities from 3 to 120 feet per second. Overall heat transfer coefficients and distributions of point heat transfer coefficients around cylinders are given for single, inline, symmetrically staggered, and unsymmetrically staggered arrangements. The overall heat transfer and pressure drop data are correlated for all arrangements. They are reduced to single equations by the determination of factors describing configuration characteristics. Report no. 41 under Contract W33-038-ac-14987.

Method of edge-punching for use on dichotomous items, by Philip H. DuBois, Jane Loevinger and Thomas L. Smith. U. S. Air Force. Air Research and Development Command. Human Resources Research Center. Personnel Research Laboratory, Lackland Air Force Base, Texas. Jul 1953. 11p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112303

Project no. 503-001-0011. Contract AF 18(600)-370.
1. Card punching 2. Punching machinery, Card 3. Washington University, St. Louis, Mo. 4. AAF HRRC RB 53-22.

Slagging gas producer for the production of mineral wool from Rhode Island meta-anthracite, by T. Stephen Crawford, Richard C. Corey, C. H. Schwartz, L. A. Spano and E. L. Carpenter. Rhode Island. Engineering Experiment Station, Kingston, R. I. Jul 1953. 35p photos, drawings, graphs, tables Available from Engineering Experiment Station, University of Rhode Island, Kingston, R. I. PB 112188

1. Mineral wool - Manufacture 2. Gas producers - Design 3. Slag wool - Manufacture 4. Coal, m-Anthracite - Uses 5. RI EES B 3.

MEDICAL RESEARCH AND PRACTICE

Biological and medical aspects of ionizing radiation: Changes in striated muscle following single intense doses of X-rays, by R. B. Lewis. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Sep 1953. 7p photos Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 112295

Destructive lesions of scattered muscle fibers in rabbit legs were observed as early as 3 hours after a single intense dose of x-radiation—72,000 r. As the time after radiation with this high dose increased, the damage became more severe, and after 1 week most of the leg tissues were necrotic with no evidence of fibroblastic proliferation to replace the gangrenous muscle. AAF SAM Proj 21-3501-0005, Report no. 6.

Effect of rapid freezing and thawing on chick embryonic epidermis, skeletal muscle, and spindle cells, by C. M. Pomerat and R. B. Lewis. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Aug 1953. 31p photos, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 112312

The results indicate that temperatures of -18° to -21° C. achieved in less than one minute are critical for the survival of embryonic muscle cells. The critical temperature for survival of epidermis exposed for less than one minute was about -30°C., whereas that for spindle cells was close to -40°C. Contract no. AF 41(607)-36. AAF SAM Proj 21-1202-0001, Report no. 4.

Effect of rapid freezing and thawing on human newborn and adult skin, by C. M. Pomerat and R. B. Lewis. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Aug 1953. 17p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112313

Preputial and normal skin, as well as scar tissue from human sources, were used to test effect of rapid cooling and thawing on epidermis and spindle cells. Preputial epithelium was found to survive after exposure to temperatures as low as -24.4°C. achieved in 40 seconds, and adult human epidermis produced emigrating cells following freezing to -20.5°C. in 35 seconds. Spindle cells survived exposure to -29.2°C. produced within 53 seconds from both preputial and adult skin, and outwandering spindle cells occurred from human scar tissue after freezing to -20.5°C. obtained in 35 seconds. Contract no. AF 41(607)-36. AAF SAM Proj 21-1202-0001, Report no. 5.

Effects of force variations before rest on rate of responding after rest, by Edward A. Bilodeau. U. S. Air Force. Air Research and Development Command. Human Resources Research Center. Perceptual and Motor Skills Research Laboratory, Lackland Air Force Base, Texas. Aug 1953. 14p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112305

Project no. 509-020-0002.
1. Fatigue - Research 2. Fatigue, Muscular - Measurement 3. AAF HRRC RB 53-26.

Efficiency of impaired ears in noise. B: Discrimination of changes in intensity, by Raymond Carhart and Charles Lightfoot. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Sep 1953. 11p diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112314

Difference limens (DLs) for intensity change in quiet and in two levels of "white" noise were measured in normal and in impaired ears. The intensity DLs for five different frequencies from 250 to 4000 c.p.s. were measured in each listening condition. Data are analyzed and conclusions presented. Contract no. AF 33(038)-22645. AAF SAM Proj 21-1203-0001, Report no. 5.

Etiologic classification of diseases involving the external ear, by Ben H. Senturia and Morris D. Marcus. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Aug 1953. 9p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 112410

Diseases of the external auditory canal have often been mistreated because of a lack of understanding of the etiologic and physiologic factors involved. This classification integrates external ear disease into the total picture of diseases of the skin and furnishes descriptions. For those who wish further information, bibliographic references are given. Contract no. AF 33(038)-28643. AAF SAM Proj 21-1601-0006, Report no. 2.

Improved methods for the study of the blood protease and its inhibitors, by Kenneth L. Burdon and Rufus K. Guthrie. U. S. Air Force. School of

Aviation Medicine, Randolph Field, Texas. Aug 1953. 16p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112411

The methods tested or developed in the authors' laboratory (1) for the elimination of the antiproteolytic power of serum or plasmin specimens, so as to permit accurate titration of their proteolytic activity in the absence of inhibitors, (2) for bringing about the conversion of plasminogen to active plasmin in vitro under control conditions, (3) for titration of the plasmin content of the inhibitor-free specimens, and (4) for titration of the trypsin-inhibiting and plasmin-inhibiting capacity of the original serum or plasma are described and appraised. Simple procedures which have been found reliable for accomplishing these several purposes are outlined, and typical findings following the use of the various tests are given. AAF SAM Proj 21-3501-0004, Report no. 3.

Improved operative technique for parabiosis, by Bernhard Hoelscher. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Sep 1953. 3p drawings Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 112367

The improved technique for parabiosis, as described, has two advantages: (1) It gives a firm support to both animals without suturing the shoulder blades together; the latter method causes a bone necrosis in many cases. (2) The animals are prevented from biting each other by a suture which unites the neck muscles. AAF SAM Proj 21-1201-0013, Report no. 1.

Theory of hearing, by W. H. Huggins. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Electronics Research Directorate. Computer Laboratory, Cambridge, Mass. May 1953. 133p photos, diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $2.00. PB 111238

1. Auditory theory 2. Ear - Physiology 3. AAF CRC TR 53-14 4. AAF CRC E 5096.

METALS AND METAL PRODUCTS

Brazing titanium to titanium and to mild and stainless steels, by W. J. Lewis, P. S. Rieppel and C. B. Voldrich. Battelle Memorial Institute, Columbus, Ohio. Nov 1952. 38p photos, diagrs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $1.00. PB 111244

Procedures and alloys suitable for brazing titanium were investigated. Contract no. AF 33(038)-23338. This report covers research during the year ending 21 Jun 1952. AAF WADC TR 52-313, part 1.

Direction fatigue tests with tensile and compressive mean stresses on 24S-T aluminium plain specimens and specimens notched by a drilled hole, by Gunnar Wallgren. Flygtekniska Försöksanstalten (FFA) Stockholm. 1953. 30p photos, drawings, diagr, graphs, tables Available from Library of Congress Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 112201

1. Aluminum alloys - Fatigue tests - Sweden 2. Aluminum alloys - Tensile tests - Sweden 3. 24S-T (Aluminum alloy) 4. FFA no. 48.

Olika ytbeläggningars inverkan pa stals hallfasthet mot utmattning (Influence of different surface coatings on the fatigue strength of steel), by Otto Forsman and Evert Lundin. Sweden. Statens Provningsanstalt, Stockholm. 1953. 9p drawing, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 112254

Summary in Swedish. Reprinted from Proceedings of the World Metallurgical Congress, Detroit, 1952. 1. Steel - Strength - Effect of coatings - Sweden 2. Steel - Fatigue tests - Sweden 3. Steel - Coatings, Protective - Tests - Sweden 4. Sweden. Statens Provningsanstalt, Stockholm. Meddelande 111.

METEOROLOGY AND CLIMATOLOGY

Annotated bibliography on snow, ice and permafrost. U. S. Library of Congress, Technical Information Division. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Vol. III. Jan 1953. 318p Microfilm $9.00, Photostat $40.00. PB 112250

1. Snow - Bibliography 2. Ice - Bibliography 3. Permafrost - Bibliography 4. U. S. Army. Corps of Engineers. Snow, Ice and Permafrost Research Establishment, Wilmette, Ill. 5. SIPRE 12, vol. 3.

Vol. IV, including cumulative subject index for volumes I-IV. Jul 1953. 363p Microfilm $9.00, Photostat $46.25. PB 112252

1. Snow - Bibliography 2. Ice - Bibliography 3. Permafrost - Bibliography 4. U. S. Army. Corps of Engineers. Snow, Ice and Permafrost Research Establishment 5. SIPRE 12, vol. 4.

Atmospheric flow patterns and their representation by spherical-surface harmonies, by B. Haurwitz and Richard A. Craig. U. S. Air Force. Cambridge Research Center. Geophysics Research Division, Cambridge, Mass. Jul 1952. 78p diagrs, graphs, tables (1 fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.50, Photostat $1.00. Limited supply available Mimeo: $10.00. PB 107898

Geophysics Research Paper 14.

Auroral studies. Quarterly report no. 1 on Contract no. AF 19(122)-152, by B. W. Currie and W. Petrie. Saskatchewan. University. Physics Dept. Apr 1950. 5p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 112165

1. Aurora borealis - Spectrographic analysis 2. Aurora borealis - Research - Equipment 3. Radiation, Auroral - Measurements 4. Recorders, Auroral - Design.

Back-scattering of electromagnetic waves from spheres and spherical shells, by A. L. Aden. U. S. Air Force. Cambridge Research Center. Geophysics Research Division, Cambridge, Mass. Jul 1952. 42p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. Limited supply available Mimeo: $1.00. Geophysics Research Paper 15. PB 107899

Effect of particle shape and secondary scattering on microwave reflections from clouds and precipitation, by Milton Kerker and Walter Hitschfeld. McGill University. MacDonald Physics Laboratory. "Stormy Weather" Research Group. Mar 1951. 32p drawing, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 112342

Contract AF 19(122)-217. Research report MW-1.
1. Particles, Precipitation - Electrical properties - Canada 2. Particles, Precipitation - Shape - Radiation effects - Canada 3. Waves, Electromagnetic - Reflection - Canada 4. Waves, Electromagnetic - Scattering - Canada.

Fluctuations of starlight and skylight. I: Astronomical "seeing" and its relation to atmospheric turbulence, by Geoffrey Keller. Ohio State University Research Foundation, Columbus, Ohio. Dec 1952. 44p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 112374

1. Atmosphere - Density - Measurement 2. Stars - Visibility 3. Autocorrelation - Theory 4. Light - Polarization 5. Mathematical equations and solutions 6. AAF CRC TR 53-15.

Gravity measurements in North America conducted during the period October 1, 1950 - December 31, 1950. Woods Hole Oceanographic Institution, Woods Hole, Mass. 1950. 18p map, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112211

Reference no. 51-15.
1. Gravity - Measurements.

International symposium on atmospheric turbulence in the boundary layer, Massachusetts Institute of Technology, 4-8 Jun 1951, edited by E. W. Hewson. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Geophysics Research Directorate, Cambridge, Mass. Dec 1952. 528p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $9.00, Photostat $62.50. Limited supply available Mimeo: $2.00. Geophysics Research Paper no. 19. PB 109853

Investigation of description, classification, and strength properties of frozen soils. U. S. Army. Corps of Engineers. New England Division. Frost Effects Laboratory, Boston, Mass. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Report of investigations fiscal year 1951, with Appendix A. Jun 1952. 220p photos, fold drawings, graphs (part fold), fold tables Microfilm $7.75, Photostat $27.50. PB 112248

1. Soils (Engineering) - Frozen ground - Classification 2. Soils (Engineering) - Frozen ground - Stress analysis 3. Soils - Freezing effects 4. SIPRE 8, vol. 1.

Fiscal year 1951. Appendix B: Investigational data. Jun 1952. 175p graphs, tables Microfilm $6.50, Photostat $22.50. PB 112249

1. SIPRE 8, vol. 2.

Isotropic and non-isotropic turbulence in the atmospheric surface layer, by Heinz Lettau. U. S. Air Force. Air Research and Development Command. Cambridge Research Laboratories. Base Directorate for Geophysical Research, Cambridge, Mass. Dec 1949. 84p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.75, Photostat $11.25. Limited supply available Mimeo: $1.00. PB 112135

1. Atmosphere - Turbulence - Theory 2. AAF GRD P1.

Measurement of snow parameters by microwaves, by J. S. Marshall and K.L.S. Gunn. McGill University. MacDonald Physics Laboratory. "Stormy Weather" Research Group. May 1951. 28p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 112343

Contract no. AF 19(122)-217. Research report MW-2.
1. Particles, Precipitation - Size - Radar measurement - Canada 2. Rayleigh theory 3. Snow - Measurements - Radar.

Modification of rain with distance fallen, by E. Caroline Rigby and J. S. Marshall. McGill University. MacDonald Physics Laboratory. "Stormy Weather" Research Group. Jan 1952.

53p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 112344

Contract no. AF 19(122)-217. Scientific report MW-3.
1. Particles, Precipitation - Size - Radar Measurement - Canada 2. Raindrops - Measurement - Canada 3. Mathematical equations and solutions 4. Rain and rainfall - Velocity - Canada.

Notes on the theory of large-scale disturbances in atmospheric flow with applications to numerical weather prediction, by Philip Duncan Thompson. U. S. Air Force. Cambridge Research Center. Geophysics Research Division, Cambridge, Mass. Jul 1952. 101p diagrs, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photostat $13.75. Limited supply available Mimeo: $1.00. Geophysics Research Paper 16. PB 107900

Observed mean field of motion of the atmosphere, by Yale Mintz and Gordon Dean. U. S. Air Force. Cambridge Research Center. Geophysics Research Division, Cambridge, Mass. Aug 1952. 63p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photostat $8.75. Limited supply available Mimeo: $1.00. Geophysics Research Paper 17. PB 107901

Orientations of auroral displays in west-central Canada, by R. Jensen. Saskatchewan. University. Physics Dept. n.d. 15p graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112175

Contract no. AF 19(122)-152. Scientific report no. AR-9.
1. Aurora borealis - Spectrographic analysis - Canada 2. Radiation, Auroral - Measurements - Canada 3. SASK AR-9.

Review of certain properties and problems of frozen ground, including permafrost, by Charles W. Lovell, Jr. and Moreland Herrin. Purdue University. Engineering Experiment Station. Mar 1953. 131p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.50, Photostat $17.50. PB 112251

Contract no. W-21-018-eng-683.
1. Permafrost - Properties 2. Soils - Freezing effects 3. Soils (Engineering) - Frozen ground 4. U. S. Army. Corps of Engineers. Snow, Ice and Permafrost Research Establishment, Wilmette, Ill. 5. SIPRE 9.

Scattering and absorption of microwaves by a melting ice sphere, by M. P. Langleben and K.L.S. Gunn. McGill University. MacDonald Physics Laboratory. "Stormy Weather" Research Group. Mar 1952. 37p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 112345

Contract no. AF 19(122)-217. Scientific report MW-5
1. Waves, Electromagnetic - Absorption - Theory - Canada 2. Waves, Electromagnetic - Scattering - Theory - Canada 3. Particles, Precipitation - Electrical properties - Canada 4. Ice crystals - Electrical properties - Canada.

Turbulence in clouds as a factor in precipitation, by T.W.R. East and J. S. Marshall. McGill University. MacDonald Physics Laboratory. "Stormy Weather" Research Group. Jul 1953. 47p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 112378

Contract no. AF 19(122)-217. Scientific report MW-15
1. Precipitation - Analysis 2. Clouds, Cumulus - Turbulence - Effect on precipitation.

Upper atmosphere research report no. VI: A detector for the Dobson ozone spectrophotometer, by H. L. Clark. U. S. Naval Research Laboratory. Aug 1948. 18p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112420

Report on NRL development of British device for measuring the amount of ozone in the atmosphere under nearly all conditions. Instrument measures absorption by ozone of solar ultraviolet energy from which measurement of the amount of ozone can be deduced. The redesigned detector employing an a-c operated photomultiplier tube, a sharply tuned amplifier, and a regulated power supply operable from 115 volts, 60 cps, gave satisfactory sensitivity for field operation. NRL P 3333.

MINERALS AND MINERAL PRODUCTS

Dielectric constant and dissipation factor of soda-potassia-silica glasses at frequencies of 1 to 300 kilocycles at room temperatures, by George F. Stockdale. Illinois. Engineering Experiment Station, Urbana, Ill. Apr 1953. 27p drawings, diagrs, graphs, tables Available from Engineering Experiment Station, University of Illinois, Urbana, Ill. $.30. PB 112184

University of Illinois Bulletin v. 50, no. 60. Appendix: Details of measurement technique and calculations of data.
1. Glass, Soda-potassia-silica - Dielectric properties 2. Glass - Electrical properties 3. Bridges, Capacity 4. ILU EES B 411.

Effect in concrete of pellet and flake forms of calcium chloride, by J. T. McCall and R. J. Claus. Presented at the thirty-second annual meeting,

January 13-16, 1953. Highway Research Board. 1953. 21p photos, diagrs, graphs, tables Available from Highway Research Board, National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. $.30. PB 112360

National Research Council. Publication 268.
1. Concrete - Additives 2. Concrete - Effect of calcium chloride 3. Calcium chloride - Effect on concrete 4. HRB BUL 75 5. NRC 268.

PACKING AND PACKAGING

Selection of cushion area in the design of package cushioning, by R. B. Orensteen. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Materials Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Mar 1953. 14p diagr, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 111227

Criteria of package cushion area selection are discussed for minimizing cushioning volume and container cubage. Stress-strain, energy-stress, and ratio of stress to energy are shown for a typical cushioning material. Procedures are outlined for using the stress value corresponding to the minimum ratio stress to energy as a criterion in cushion area selection for optimum package design. First of a series of reports on package cushioning. AAF WADC TR 53-43.

Technique for the design of glass fiber package cushioning, by Roger B. Orensteen. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Research Division. Materials Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Mar 1953. 18p graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 111228

A technique is demonstrated by which static cushioning data can be used in the design of glass fiber package cushioning. Design curves are provided for selecting density, thickness, and cushion area for economical cushion design. Consideration is given to the advantages of glass fiber cushioning of small area and high density. Second of a series of reports on package cushioning. AAF WADC TR 53-68.

PAPER AND ALLIED PRODUCTS

Om vikningshallfastheten hos papper (Folding endurance of paper), by Sigurd Köhler. Sweden. Statens Provningsanstalt, Stockholm. 1953. 32p photo, graphs, tables (Text in Swedish) Available from Library of Congress, Publication Board Project, Washington 25, D . C. Microfilm $2.25, Photostat $5.00. PB 112253

Summary in English. Reprinted from Svensk Papperstidning nr. 5, 1953.
1. Paper - Fatigue tests - Sweden 2. Paper - Testing machines - Sweden 3. Sweden. Statens Provningsanstalt, Stockholm. Meddelande 110.

PERSONNEL APTITUDE TESTING

Attitude and information patterns of OCS eligibles, by Milton G. Holmen and Robert V. Katter. George Washington University. Human Resources Research Office, Washington, D. C. Oct 1953. 51p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 112382

Research memorandum 2.
1. Cfficer candidate school - Qualifications 2. Military training - Mental attitude.

Guide for determining training aid and device requirements, by Douglas H. Fryer, Mortimer R. Feinberg Robert M. Tomlinson. Richardson, Bellows, Henry Co., Inc., New York, N. Y. May 1952. 48p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 111248

Contract N7onr-38304.
1. Training devices 2. SDC TR 383-04-1.

How pictures and graphs aid learning from print. Illinois. University. Division of Communications. Jul 1953. 33p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 112291

HRRI project: "Research on learning situations and methods of instruction in Air Force officer education." Contract AF 18(600)-33.
1. Learning - Theory 2. Graphic methods 3. Pictures - Uses 4. U. S. Air Force. Air Research and Development Command. Human Resources Research Institute, Maxwell Air Force Base, Ala. 5. AAF HRRI RM 11.

Joint conversion tables for Air Force classification tests and Army classification tests, by Virginia Zachert and Gabriel Friedman. U. S. Air Force. Air Research and Development Command. Human Resources Research Center. Personnel Research Laboratory, Lackland Air Force, Base, Tex. Aug 1953. 38p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 112306

Project no. 503-002-0002.
1. Ability tests 2. Personnel, Flying - Classification 3. Personnel, Military - Classification 4. Conversion coefficients - Tables 5. AAF HRRC RB 53-29.

Survey of television utilization in Army training. Final report under Contract 530 (OI), by Martin F. Fritz, James E. Humphrey, J. A. Greenlee, Ralph L. Madison. Iowa State College, Ames, Iowa. Dec 1952. 158p photos Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 111251

1. Television - Educational value 2. Military training - Use of television 3. SDC 530-01-1.

Visual message presentation. Quarterly progress report no. 17, May 8, 1953 to Aug 8, 1853, under Contract no. AF 19(122)-7, Item I, by S. H. Chang, M. W. Essigmann, G. E. Pihl, H. L. Stubbs, L. C. Dolansky, L. G. Jones, M. L. Bovarnick, J. Wiren, J. J. Kelly. Northeastern University, Boston, Mass. Aug 1953. 48p photos, diagrs, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 112365

General consideration is given to the tentative block diagram of a speech-analyzer component for use in a proposed speech-compression system. The general scheme employs existing techniques of speech analysis to perform the processes of segmentation and identification of discrete speech units, here defined as phonoids. Terminal results are reported on the intervalgram studies and on the construction of an electronic analog divider circuit. For 1st-13th, 16th reports see PB 110840-110853.

What makes for readable writing and reading success. Illinois. University. Division of Communications. Jul 1953. 36p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 112290

HRRI project: "Research on learning situations and methods of instruction in Air Force officer education." Contract AF 18(600)-335.
1. Readability 2. Reading - Ability tests 3. Learning - Theory 4. U. S. Air Force. Air Research and Development Command. Human Resources Research Institute, Maxwell Air Force Base, Ala. 5. AAF HRRI RM 10.

PHYSICS

General

"T" phase of shallow focus submarine earthquakes, by Ivan Tolstoy, Maurice Ewing, Frank Press. Columbia University. Lamont Geological Observatory, Palisades, N. Y. Jan 1949. 47p photos, graphs (1 fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 112436

Contract W-28-099-ac-396.
1. Seismology - Research 2. Sound - Propagation - Theory 3. CUN LGO TRS 1.

Tests by the analysis of variance, by Eldo G. Mentzer. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Flight Research Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Jan 1953. 53p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 112386

The Analysis of Variance procedure is described, and its possible applications and usefulness are discussed. The various statistical models and the tests by Analysis of Variance are explained. Test schemes and alternate test schemes are given (in Section VI) for all possible models of the two-factor, three-factor, and four-factor cases. AAF WADC TR 53-23.

Transport of momentum, mass and heat in turbulent jets, by Lloyd G. Alexander, Thomas Baron, Edward W. Comings. Illinois. Engineering Experiment Station, Urbana, Ill. May 1953. 88p photos, drawings, diagr, graphs, tables Available from Engineering Experiment Station, University of Illinois, Urbana, Ill. $.75. PB 112186

Report of an investigation conducted in cooperation with the Office of Naval Research under Contract N6-ori-71, Task order XI on mixing of fluid streams. University of Illinois Bulletin vol. 50, no. 66.
1. Flow, Turbulent - Theory 2. Flow, Jet mixing - Theory 3. Heat - Transference - Theory 4. Momentum - Theory 5. Reichardt's theory (Jet flow) 6. ILU EES B 413.

Nuclear

Gamma radiation from interaction of 3.3 Mev neutrons with lead, by V. E. Scherrer, B. A. Allison, and W. R. Faust. U. S. Naval Research Laboratory. Oct 1953. 4p diagr, graphs, table Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 111252

Observations have been made of gamma rays produced by the bombardment of lead with 3.3-Mev neutrons. Various gamma-ray lines have been identified, and calculations of gamma-ray production cross sections have been made. NRL R 4252.

Natural radiocarbon 14 measurement and applications. Columbia University, Lamont Geological Observatory, Palisades, N. Y. Under Contract no. AF 19(122)-214, by J. Laurence Kulp. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Quarterly progress report no. 1. Sep 1950. 17p photos, drawings (1 fold) Microfilm $1.75, Photostat $2.50. PB 112431

1. Carbon - Isotopes - Tracer technique 2. Radiocarbon - Measurement 3. Radiocarbon - Measuring equipment.

Quarterly progress report no. 6. Oct 1951. 15p tables Microfilm $1.75, Photostat $2.50. PB 112434

Contains Extension of the carbon 14 age method, by J. Laurence Kulp and Lansing E. Tryon.
1. Carbon - Isotopes - Tracer technique 2. Radiocarbon - Measurement 3. Age - Determination.

Quarterly progress report no. 8. May 1952. 15p tables Microfilm $1.75, Photostat $2.50. PB 112435

1. Carbon - Isotopes - Tracer technique 2. Radiocarbon - Measurement 3. Geiger counters 4. Age - Determination 5. Counters, Electronic.

Some approximate formulae for use in neutron shielding, an A.E.R.E. report, by K. T. Spinney. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Jul 1953. 16p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 112338

HD. 953. S. O. code no. 70-674-1-49.
1. Neutrons - Shielding - Theory - Gt. Brit. 2. Radiation - Protection - Gt. Brit. 3. Atomic power - Research - Gt. Brit. 4. AERE T/R 1221.

Training aid, radioactive source, E13R1 (source, radioactive cobalt 60, E12R1 and tongs, remote handling, E5R1). Final engineering test no. 91, by Robert F. Nordhoff and Russell E. Pierson. U. S. Chemical Corps. Chemical and Radiological Laboratories, Army Chemical Center, Md. Sep 1953. 31p photos, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 112355

Project 4-12-55-001. Contents: - Appendix A: Plan of test, by Harold L. Gotoff.
1. Cobalt, Radioactive - Shipping cases 2. Cobalt, Radioactive - Handling 3. Training equipment, Radioactive - Handling 4. CC CRL R 237.

PHYSIOLOGY

Escape and survival at high altitude, by Fritz Haber. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Sep 1953. 13p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112369

The speed of future aircraft will be limited by the temperatures caused by aerodynamic heating. Thermal considerations call for high altitudes if flying speed is increased. At the high altitudes required, windblast and dangers of escape proper will be reduced. The phase of free fall should last much longer after bailouts. High speeds attained in such falls create decelerations which could be dangerous. AAF SAM Proj 21-1207-0006.

PSYCHOLOGY

Stimulus presentation devices for use in studies of discrimination abilities, by Harold P. Bechtoldt. and R. F. Mager. U. S. Air Force. Air Research and Development Command. Human Resources Research Center. Perceptual and Motor Skills Research Laboratory, Lackland Air Force Base, Texas. Jul 1953. 29p photos, diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 112304

Project no. 509-020-0009. Contract no. AF 33(038)-13215.
1. Psychological tests - Equipment 2. Timers, Reaction 3. AAF HRRC RB 52-23.

STRUCTURAL ENGINEERING

Bibliography on high frequency and dielectric induction heating, compiled by the staff of Northwestern Technological Institute Library. Northwestern University. Library, Evanston, Ill. Aug 1946. 99p Available with supplement from Northwestern University. Library, Evanston, Ill. $.65. PB 112327

Supplement available as PB 112327s. 1949. 46p.
1. Heating, Dielectric - Bibliography 2. Heating, Induction - Bibliography.

Heat emission characteristics of warm-air perimeter heating ducts, by John R. Jamieson, Robert W. Roose, Herbert T. Gilkey, Seichi Konzo. Illinois. Engineering Experiment Station, Urbana, Ill. May 1953. 84p photos, drawings, diagrs, graphs, tables Available from Engineering Experiment Station, University of Illinois, Urbana, Ill. $.80. PB 112185

Report of an investigation conducted in cooperation with the National Warm Air Conditioning Association. University of Illinois Bulletin vol. 50, no. 68.
1. Ducts, Air - Heating 2. Heat, Radiant - Research 3. Heat - Transference - Measurements. 4. Floors and flooring, Concrete - Heating 5. Floors and flooring, Concrete - Insulation 6. ILU EES 412.

Shear stresses in curved tubes, by Turner E. Pardue. U. S. Naval Research Laboratory. Oct 1953. 11p photos, diagrs, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.50. PB 111249

Shear stresses produced in a curved tube and its tangents, by torsional and bending moments, have been determined from strain measurements made on the outside of a tube turn. The shear stress distribution was found to differ greatly from the distribution expected in a similarly curved rod. Furthermore, shear stresses were found in the tangent adjacent to the bend when only an out-of-plane or in-plane bending moment acted at that cross section. There are at present no theoretical analyses with which the results of these preliminary experiments can be compared. NRL R 4215.

Wall and ceiling surfaces and condensation. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Sep 1953. 4p table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.10. PB 112346

S. O. code no. 72-22-0-58.
1. Ceilings - Moisture - Prevention - Materials - Gt. Brit. 2. Walls - Moisture - Prevention - Materials - Gt. Brit. 3. Condensation, Water vapor - Houses - Gt. Brit. 4. DSIR BRD 58.

TEXTILES AND TEXTILE PRODUCTS

Air permeability of parachute cloths, by M. J. Goglia. Georgia Institute of Technology. State Engineering Experiment Station, Atlanta, Ga. Nov 1952. 137p photos, drawings, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $2.00. PB 111242

The air permeability of eight standard nylon parachute cloths was determined using a sample 6.05 inches in diameter in a wind tunnel whose capacity permitted obtaining static pressure differentials across the cloth as high as 55 inches of water. Fifty-nine experimental nylon cloths were subjected to the same test procedure, as were two experimental fabrics of orlon and dacron, respectively. Contract no. AF 33(038)-15624. AAF WADC TR 52-283.

Tensile behavior of some protein fibers, by George Susich and Walter Zagieboylo. U. S. Office of the Quartermaster General. Research and Development Division. Textiles, Clothing and Footwear Branch. Jul 1953. 42p graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.25. PB 111235

The tensile properties of wool, mohair, human hair, casein, Vicara, and silk including their behavior when knotted, after repeated stresses (mechanical conditioning) and when swollen in water were investigated. The immediate elastic recovery, delayed recovery and permanent set of these fibers were measured by a cycling technique using the Instron tensile tester and the Sookne-Harris fiber extensometer. Actual and relative values of elongation components under different testing conditions are demonstrated graphically from the beginning of the stretching procedure up to rupture. QMC TSR 80.

TRANSPORTATION EQUIPMENT

Aeronautics

Aircraft

Analytical study of the effect of airplane wake on the lateral dispersion of aerial sprays, by Wilmer H. Reed, III. U. S. National Advisory Committee for Aeronautics. Oct 1953. 46p diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112297

An analysis is made to determine the trajectories and deposit of aerial spray droplets which are issued into the air disturbances generated by an agricultural airplane. Various nozzle arrangements and droplet-size spectra are considered with a view to improving the uniformity and effective width of the deposit. NACA TN 3032.

Comparison of two methods of calculating wing loading with allowance for compressibility, by V. M. Falkner, with appendix: Note on Falkner's method for calculating compressibility effects on wing loading, by W. P. Jones. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Oct 1949. 53p diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $3.50. PB 112320

Cover date is 1953. S. O. code no. 23-2685.
1. Wings, Tapered - Loading - Calculations - Gt. Brit. 2. Flow, Compressible - Theory - Gt. Brit. 3. Prandtl-Glauert theory (Aerodynamics) - Gt. Brit. 4. Mach number - Effect 5. ARC RM 2685.

Electrostatic spark ignition-source hazard in airplane crashes, by Arthur M. Busch. U. S. National Advisory Committee for Aeronautics. Oct 1953. 28p photos, diagrs, graphs, table Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112310

1. Airplanes - Fire hazards 2. Combustion - Gas dynamics 3. Airplanes - Coatings, Protective 4. Coatings, Polyethylene - Fire resistance 5. U. S. Lewis Flight Propulsion Laboratory, Cleveland, O. 6. NACA TN 3026.

Estimation of skin temperatures attained in high speed flight, by F. V. Davies and R. J. Monaghan. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Feb 1952. 65p diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $2.85. PB 112339

Cover date is 1953. S. O. code no. 23-9007-23. 1. Heat - Transference - Theory - Gt. Brit. 2. Airplanes - Skin - Temperature - Gt. Brit. 3. Missiles, High-speed - Skin temperature - Gt. Brit. 4. ARC CP 123 5. RAE TN Aero 2454.

Experimental investigation of the stress distribution in a plastic model of a 35° swept back wing with multi-web construction, by Bryan R. Noton. Flygtekniska Försöksanstalten (FFA) Stockholm. 1953. 45p photos, drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 112200

1. Wings, Sweptback - Stress analysis - Sweden 2. Wings - Model tests - Sweden 3. FFA no. 47.

Flight test engineering manual, by Russel M. Herrington and Paul E. Shoemacher. U. S. Air Force. Air Research and Development Command. Air Force Flight Test Center, Edwards Air Force Base, Edwards, Calif. Corrected and revised. Jan 1953. 431p drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $9.00, Photostat $55.00. PB 112389

Methods of obtaining flight test data for reciprocating engine aircraft (including helicopters) and turbojet aircraft are presented together with various methods of data analysis and data presentation. Correction of aircraft performance to standard conditions is included, as are detailed derivations of correction factors and performance parameters. Numerous graphs and charts containing information required by and useful to the flight test engineer are presented, together with sample data reduction forms and sample flight test programs. AAF TR 6273.

Flow about a section of a finite-aspect-ratio NACA 0015 airfoil on a transonic bump, by Jack A. Mellenthin. U. S. National Advisory Committee for Aeronautics. Oct 1953. 30p photos, drawing, diagrs, graphs, table Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112311

1. Flow, Mixed 2. Airfoils - Aspect ratio 3. Wings - Pressure distribution 4. Mach number - Effect 5. U. S. Ames Aeronautical Laboratory, Moffett Field, Calif. 6. NACA TN 3036.

Graphical solution of some automatic-control problems involving saturation effects with application to yaw dampers for aircraft, by William H. Phillips. U. S. National Advisory Committee for Aeronautics. Oct 1953. 41p diagrs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112359

1. Airplanes - Controls, Automatic 2. Stability, Lateral - Theory 3. Stability, Directional - Theory 4. Stability, Lateral - Yaw effect 5. Damping capacity - Theory 6. Yawing moments - Calculation 7. U. S. Langley Aeronautical Laboratory, Langley Field, Va. 8. NACA TN 3034.

Investigation of the use of an auxiliary slot to reestablish laminar flow on low-drag aerofoils, by R. W. Cumming, N. Gregory and W. S. Walker. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1950. 14p diagr, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.00. PB 112321

Cover date is 1953. S. O. code no. 23-2742. 1. Airfoils, Low drag - Suction - Gt. Brit. 2. Airfoils, Low drag - Slots - Gt. Brit. 3. Flow, Laminar - Theory - Gt. Brit. 4. ARC RM 2742.

Measured aircraft vibration as a guide to laboratory testing, by D. C. Kennard, Jr. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Equipment Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. May 1951. 15p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112424

The results of a statistical analysis performed upon data defining conditions of vibration measured in flight for a wide variety of aircraft are described. The conditions of vibration required by existing laboratory testing procedures are compared to the conditions which emanate from this statistical analysis. Graphs are presented comparing the vibration characteristics of jet-powered aircraft with those of conventional aircraft. These graphs include statistical plots of vibration parameters for each of the following data categories: fighter and bomber aircraft; flight, landing, and gunfiring conditions; various locations and directions on aircraft. Conclusions are drawn as to the validity of present laboratory vibration testing procedures and as to possible revisions which might improve the quality of laboratory simulation. AAF TR 6429.

Measurement of the overall drag of an aircraft at high Mach number, by D. J. Higton, R. H. Plascott and D. A. Clarke. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jan 1949. 22p photo, diagr, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.40. PB 112322

Cover date is 1953. S. O. code no. 23-2748.
1. Airplanes - Drag - Measurement - Gt. Brit. 2. Mach number - Effect - Gt. Brit. 3. Meteor IV (Airplane) - Gt. Brit. 4. ARC RM 2748.

Method for studying helicopter longitudinal maneuver stability, by Kenneth B. Amer. U. S. National Advisory Committee for Aeronautics. Oct 1953. 54p photos, diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112357

A theoretical analysis of helicopter maneuver stability is made and the results are compared with experimental results for both a single- and a tandem-rotor helicopter. Techniques are described for measuring in flight the significant stability derivatives for use with the theory to aid in design studies of means for achieving marginal maneuver stability for a prototype helicopter. NACA TN 3022.

Note on the effect of variable wall temperature on heat transfer, by H. B. Squire. Being an addendum to "Heat transfer calculation for aerofoils" (R. & M. 1986, November, 1942). Gt. Brit. Ministry of Supply. Aeronautical Research Council. Oct 1950. 2p table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 112324

Cover date is 1953. S. O. code no. 23-2753.
1. Airfoils - Heat transference - Gt. Brit. 2. Heat - Transference - Measurements - Gt. Brit. 3. Walls - Heat transmission - Gt. Brit. 4. ARC RM 2753 5. ARC RM 1986 Addendum.

Notes on the technique employed at the R. A.E. in low-speed wind tunnel tests in the period 1939-1945, edited by F. B. Bradfield. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Oct 1947. 71p photos, drawings, diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $4.50. PB 112319

Cover date is 1952. S. O. code no. 23-2556. Contents: 1. Complete models with slipstream in no. 1, 11½-ft. tunnel, by A. Anscombe. - 2. Complete models of jet aircraft in no. 1, 11½-ft. tunnel, by A. Anscombe. - 3. Model tests of duct systems in aircraft (R.A.E.), by J. Seddon. - 4. Cooling and installation tests on actual power plants in the 24-ft tunnel, by J. Seddon and T. B. Owen. - 5. Partial models, by F. B. Bradfield. - 6. Jettisoning tests, by R. Fail. - 7. Use of threads and wires to control transition on wind tunnel models, by L. W. Bryant and A. Anscombe.
1. Airplanes - Models - Tests - Gt. Brit. 2. Airplanes, Jet propelled - Wind tunnel tests - Gt. Brit. 3. Airplanes - Equipment - Jettisonable - Gt. Brit. 4. Engines, Aircraft - Cooling - Gt. Brit. 5. Ducts, Air - Performance - Gt. Brit. 6. Airplanes - Slipstream - Gt. Brit. 7. ARC RM 2556.

Preliminary study of the problem of designing high-speed airplanes with satisfactory inherent damping of the Dutch roll oscillation, by John P. Campbell and Marion O. McKinney, Jr. U. S. National Advisory Committee for Aeronautics. Oct 1953. 40p diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112298

1. Airplanes, High-speed - Design 2. Airplanes, High-speed - Stabilization 3. Airplanes, Jet propelled - Stability 4. Wings - Aspect ratio - Theory 5. Wings - Sweep - Theory 6. Flow, Subsonic - Theory 7. U. S. Langley Aeronautical Laboratory, Langley Field, Va. 8. NACA TN 3035.

Pressure error measurement using the formation method, by K. C. Levon. Gt. Brit. Ministry of Supply. Aeronautical Research Council. 1953. 15p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.75. PB 112340

Report no. A.E.R.E/Res/262. S. O. code no. 23-9007-26.
1. Airplanes - Pressure distribution - Gt. Brit. 2. Airplanes - Speed - Measurements - Gt. Brit. 3. Flying, Formation - Pressure measurements - Gt. Brit. 4. ARC CP 126.

Über die strömung an ringförmigen verkleidungen. (Concerning the flow about ring-shaped cowlings). Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C.

XIII. mitteilung: Der einfluss einer vorgezogenen nabe. (Part XIII: The influence of a projecting hub), by D. Küchemann. Oct 1953. 19p diagrs, graphs PB 39097t

1. ZWB UM 3144 Translation 2. NACA TM 1361.

XII. mitteilung: Zwei neue klassen von ringhauben (Part XII: Two new classes of circular cowls), by Dietrich Küchemann and Johanna Weber. Oct 1953. 72p diagrs, graphs, tables PB 39121t

Translation of Zentrale für Wissenschaftliches Berichtswesen der Luftfahrtforschung. Untersuchungen und mitteilungen, no. 3111 (PB 39121). 1. NACA TM 1360. 2. ZWB UM 3111 Translation.

Instruments

High-frequency pressure indicators for aerodynamic problems, by Y. T. Li. U. S. National Advisory Committee for Aeronautics. Nov 1953. 52p photos, drawings, diagrs, graphs, table Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112406

Three different types of pressure indicators are discussed. Of the mechanical-electrical-transducer type of pressure indicator, the wire strain gage leads in simplicity. The capacitance type is more versatile. The system utilizing the stretching of a barium-titanate disk produces large signals and results in compact design. Five different types of pressure receivers were tested. The flat-diaphragm type leads the others in simplicity, the spherical-diaphragm type exceeds in dynamic performance, and the catenary-diaphragm type is the one least affected by temperature change. NACA TN 3042.

Engines and Propellers

Experiments on conical diffusers, by H. B. Squire. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Nov 1950. 18p drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.1.25. PB 112323

Cover date is 1953. S. O. code no. 23-2751.
1. Diffusers, Conical - Pressure distribution - Gt. Brit. 2. Diffusers, Conical - Velocity distribution - Gt. Brit. 3. ARC RM 2751.

Influence of rotor-engine torsional oscillation on control of gas-turbine engine geared to helicopter rotors, by John C. Sanders. U. S. National Advisory Committee for Aeronautics. Oct 1953. 40p photos, drawings, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112358

Equations were developed for the torsional motion of a gas-turbine engine geared to a helicopter rotor in which the rotor blades were hinged to the rotor shaft. The rotor system was simplified to yield simple third-order equations that can be used in the analysis of engine control. NACA TN 3027.

Investigation utilizing an electrical analogue of cyclic de-icing of hollow steel propellers with internal electric heaters, by Carr B. Neel, Jr. U. S. National Advisory Committee for Aeronautics. Oct 1953. 31p photos, diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112196

An analytical study, utilizing an electrical analogue, of the heat requirements for cyclic de-icing of hollow steel propellers fitted with two types of internal electric heaters showed the impracticability of using an internal tubular heater, and illustrated the advantages of employing an internal shoe-type heater to distribute the heat more evenly to the blade surface. NACA TN 3025.

Tests on an axial compressor with various stator blade staggers, by R. A. Jeffs, E. L. Hartley and P. Rooker. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Sep 1950. 18p drawings, diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.75. PB 112341

Cover date is 1953. Memorandum no. M.100.
S. O. code no. 23-9007-32.
1. Compressors, Axial - Blades - Tests - Gt. Brit. 2. Compressors, Axial - Blades - Design - Gt. Brit. 3. ARC CP 132.

Theoretical pressure distributions around some conventional turbine blades in cascade, by T. J. Hargest. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1950. 10p diagrs, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.75. PB 112325

Cover date is 1953. S. C. code no. 23-2765.
1. Turbines - Blades - Pressure distribution - Gt. Brit. 2. Cascades (Aerodynamics) - Theory - Gt. Brit. 3. ARC RM 2765.

Training and Training Devices

Relation of selected background factors to the job satisfaction of airman instructors in Air Force technical schools, by Arthur J. Hoehn and Charles E. Zeleny. U. S. Air Force. Air Research and Development Command. Human Resources Research Center. Technical Training Research Laboratory, Chanute Air Force Base, Ill. Aug 1953. 31p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 112307

Project no. 507-010-0001.
1. Instructors, Aviation - Psychological tests 2. AAF HRRC TR 53-25.

Use of graphs in Air Force teaching materials, by Lewis V. Peterson. Illinois. University. Division of Communications. Aug 1953. 47p drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 112381

Contracts AF 18-600-321 and AF 18-600-335.
1. Graphic methods 2. U. S. Air Force. Air

Research and Development Command. Human Resources Research Institute, Maxwell Air Force Base, Ala. 3. AAF HRRI RM 14.

Aerodynamics

Acoustic derivation of supersonic theory, by Lee S. Wasserman. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Flight Research Laboratory. Wright-Patterson Air Force Base, Dayton, Ohio. Aug 1951. 35p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 112136

The physical phenomena taking place around an airfoil at supersonic speeds are described starting from the principle of a simple fixed source of sound. Possible applications of the method to non-linear problems and certain unsolved linear problems are indicated. AAF TR 6617.

Analogy between mass and heat transfer with turbulent flows, by Edmund E. Callaghan. U. S. National Advisory Committee for Aeronautics. Oct 1953. 19p diagr, graphs Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112407

An analysis of combined heat and mass transfer from a flat plate has been made in terms of Prandtl's simplified physical concept of the turbulent boundary layer. The results of the analysis show that for conditions of reasonably small heat and mass transfer, the ratio of the mass- and heat-transfer coefficients is dependent on the Reynolds number of the boundary layer, the Prandtl number of the medium of diffusion, and the Schmidt number of the diffusing fluid in the medium of diffusion. NACA TN 3045.

Analysis of turbulent heat transfer and flow in the entrance regions of smooth passages, by Robert G. Deissler. U. S. National Advisory Committee for Aeronautics. Oct 1953. 88p diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112128

A previous analysis for fully developed turbulent heat transfer and flow with variable fluid properties is extended and applied to the entrance regions of smooth tubes and parallel flat plates. Integral heat-transfer and momentum equations are used for calculating the thicknesses of the thermal and flow boundary layers. The effect of variable properties is determined for the case of uniform heat flux, uniform initial temperature distribution, and fully developed velocity distribution. NACA TN 3016.

Calculation of the complete downwash in three dimensions due to a rectangular vortex, by Doris E. Lehrian. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1949. 45p graphs (3 fold), tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $3.50. PB 112326

Cover date is 1953. S. C. code no. 23-2771. 1. Downwash (Aerodynamics) - Theory - Gt. Brit. 2. Vortex motion - Theory - Gt. Brit. 3. ARC RM 2771.

Compressible laminar boundary layer with heat transfer and small pressure gradient, by George M. Low. U. S. National Advisory Committee for Aeronautics. Oct 1953. 68p graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112296

A perturbation method for the calculation of velocity and temperature profiles, skin-friction and heat-transfer characteristics for two-dimensional compressible laminar boundary layers with heat transfer and small arbitrary gradient is presented. Contents: Appendix A: Symbols. - Appendix B: Numerical solution of differential equations, by Lynn U. Albers. - Appendix C: Solution of first order-equations for N=O. - Appendix D: Solution for Pr=1. NACA TN 3028.

Counting methods and equipment for mean-value measurements in turbulence research, by H. W. Liepmann and M. S. Robinson. U. S. National Advisory Committee for Aeronautics. Oct 1953. 49p photos, diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112405

Methods of measuring the probability distributions and mean values of random functions as encountered in turbulence research were studied. Applications to the measurement of probability distributions of the axial velocity fluctuation u(t) and its derivative du/dt in isotropic turbulence are shown. The chronological development of apparatus is described, concluding with the 10-channel statistical analyzer. NACA TN 3037.

Determination of boundary-layer transition Reynolds numbers by surface-temperature measurement of a 10° cone in various NACA supersonic wind tunnels, by Albert O. Ross. U. S. National Advisory Committee for Aeronautics. Oct 1953. 26p drawing, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112257

1. Flow, Laminar - Theory 2. Flow, Turbulent - Theory 3. Reynolds number - Effect 4. Mach number - Effect 5. Cones - Surface temperature 6. Heat - Transference - Theory 7. Boundary layer - Transition point 8. Wind tunnels, Supersonic - Tests 9. NACA TN 3020.

Preliminary experimental investigation of low-speed turbulent boundary layers in adverse pressure gradients, by Virgil A. Sandborn. U. S. National Advisory Committee for Aeronautics. Oct 1953. 33p photos, drawings, graphs Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 112258

1. Flow, Incompressible - Theory 2. Flow, Turbulent - Theory 3. Wings - Boundary layer - Temperature distribution 4. Aerodynamics, Internal - Theory 5. Airplanes - Skin - Friction 6. Instruments, Measuring - Thermo-technical 7. Boundary layer, Laminar - Flow - Pressure gradients 8. Ludwieg-Tillmann formula (Skin friction) 9. NACA TN 3031.

Land Transportation

Methods of converting heavy motor vehicle loads into equivalent design loads on the basis of maximum shears, by Henson K. Stephenson and Kriss Cloninger, Jr. Texas. Engineering Experiment Station, College Station, Texas. Jul 1953. 204p diagrs, tables Available from Texas Engineering Experiment Station, Texas A. & M. College System, College Station, Texas. PB 112370

Publication resulting from the cooperative investigation of bridge types, by the Bureau of Public Roads and the Texas Engineering Experiment Station.
1. Motor vehicles - Loads - Calculation 2. Bridges - Load distribution 3. Trucks - Loads 4. Shear stress - Analysis 5. TU EES B 131.

WATER SUPPLY, SANITATION AND PUBLIC HEALTH

Ground water in Swedish eskers, by Gustav Winqvist. Sweden. Kungl. Tekniska Högskolan, Stockholm. 1953. 91p maps, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.25, Photostat $12.50. PB 110749

Civil engineering and building construction series, vol. 2, no. 4.
1. Water, Ground - Sweden 2. Water supply - Sweden 3. Sweden. Kungl. Tekniska Högskolan, Stockholm. Handlingar no. 61 4. Acta polytechnica 117.

Memorandum on principles of design for small domestic sewage treatment works. Gt. Brit. Ministry of Housing and Local Government. 1953. 21p drawings Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.25. PB 112316

S. O. code no. 75-24.
1. Sewage disposal plants - Design - Gt. Brit. 2. Septic tanks - Design - Gt. Brit.

Some mechano-chemical properties of water, by W. A. Weyl and E. C. Marbae. U. S. Office of Naval Research. n.d. 15p diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 110799

1. Water - Properties 2. NAVEXOS P-571.

MISCELLANEOUS

L'assistance technique du gouvernement des Etats-Unis au service de l'economie Française. Comment utiliser ses services (Technical assistance of the United States government to the French economy. How to make use of its services). Association Française pour l'Accroissement de la Productivité, Paris. Jul 1952. 24p (Text in French) Available from Mr. Georges Paques, Director of Public Relations, Association Française pour l'Accroissement de la Productivité, 11 rue Faubourg St. Honoré, Paris, France. PB 112086

1. Technological intelligence 2. Technology, Industrial - Uses.

Cadres et maitrise, leur formation en tant que chefs aux Etats-Unis. Rapport de mission de 12 experts française a Monsieur le Ministre des Affaires Economiques, President du Comité National de la Productivité (Leaders and supervisors, their training and that of chiefs, in the United States). Mission "Cadres et Matrise". n.d. 142p Available from Mr. Georges Paques, Director of Public Relations, Association Française pour l'Accroissement de la Productivité, 11 rue Faubourg St. Honoré, Paris, France. PB 112114

Enquête en vue de l'accroissement de la productivité. Annexes are listed but published separately.
1. Supervisors - Training 2. Business management 3. Association Française pour l'Accroissement de la Productivité, Paris.

Chesapeake Bay annex of the Naval Research Laboratory. U. S. Naval Research Laboratory. Apr 1949. 17p photos, map Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50.
PB 110802

1. Laboratories, Naval research 2. NRL R3442.

La comptabilité, mesure et facteur de productivité. Rapport de la Mission Française des Experts-Comptables aux Etats-Unis (Accounts, measurement and contributing element in productivity. Report of the French mission of accounting experts to the U. S. A.). Mission Française des Experts-Comptables aux Etats-Unis, 1951. n.d. 337p photos, drawings, graphs, tables (Text in French) Available from Mr. Georges Paques, Director of Public Relations, Association Française pour l'Accroissement de la Productivité, 11 rue Faubourg St. Honoré, Paris, France.
PB 112090

1. Accounting - Methods 2. Business management 3. Association Française pour l'Accroissement de la Productivité, Paris.

Correlation index: Document series and PB reports, edited by Gretchen E. Runge, compiled by the Science-Technology Group, Special Libraries Association of Philadelphia and Vicinity with the cooperation of Office of Technical Services, U. S. Dept. of Commerce, Washington, D. C. Special Libraries Council of Philadelphia and Vicinity. Science-Technology Group. 1953. 282p Available from Special Libraries Association, 31 East 10th St., New York 3, N. Y. $10.00. PB 110899

Appendix: Sources of research and development reports from the government, compiled by Eugene B. Jackson (Reprinted from Special Libraries Mar 1953, p. 102-108).
1. Scientific research - Bibliography 2. Industrial research - Bibliography 3. Technical research - Bibliography 4. U. S. Office of Technical Services.

Design for production. Report of a visit to the U.S.A. in 1952 of a British specialist team on design for production. Anglo-American Council on Productivity. Oct 1953. 81p drawings, fold graph, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.90.
PB 106482

1. Industry - Organization, Control, etc.
2. Industrial research 3. Design, Industrial.

Fire prevention and control. Organisation for European Economic Co-operation, Paris. Oct 1952. 91p table Available from Columbia University Press, 2960 Broadway, New York 27, N. Y. $1.25.
PB 110784

Technical assistance mission no. 67. Circulated under the symbol TAR 67(52)1.
1. Fire prevention - Europe 2. Fire fighting equipment - Europe 3. Explosions, Dust - Europe 4. OEEC TAR 67.

Gravity field of disturbing masses in the earth's crust, by Reino A. Hirvonen. Ohio State University Research Foundation. Mapping and Charting Research Laboratory, Columbus, Ohio. Dec 1952. 28p diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75.
PB 112018

Contract no. AF 19(604)-287. Project 504. AFCRC Technical Report.
1. Gravity - Theory 2. Harmonic functions 3. OSURF TP 170.

Gravity program of the Mapping and Charting Research Laboratory at Columbus and related problems, by F. A. Vening Meinesz. Ohio State University Research Foundation. Mapping and Charting Research Laboratory, Columbus, Ohio. Dec 1952. 14p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50.
PB 112017

Contract no. AF 19(604)-287. Project 504. AFCRC Technical report.
1. Gravity - Theory 2. Geodesy 3. OSURF TP 169.

Manutention dans les ports et entreposage (Mission française aux Etats-Unis de Mai-Juin 1951) (Management of ports and warehousing (French mission to the United States in May-June 1951). Mission Manutention dans les Ports et Entreposage. 1951. 112p photos, map, tables (Text in French) Available from Mr. Georges Paques, Director of Public Relations, Association Française pour l'Accroissement de la Productivité, 11 rue Faubourg St. Honoré, Paris, France.
PB 112099

Enquêtes en vue de l'accroissement de la productivité.
1. Ports - Management 2. Warehousing 3. Association Française pour l'Accroissement de la Productivité, Paris 4. Union Nationale des Industries de la Manutention dans les Ports Français.

Marine borer activity in test boards operated during 1951. Fifth progress report under Con-

tract no. N7onr-466, T. O. I, by Dorothy J. Brown. Clapp, William F., Laboratories, Inc., Duxbury, Mass. Mar 1952. 136f graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.50, Enlargement Print $18.75. PB 110779

Project NR 163-193. Supplement to Report 6063 on Test board studies from 1942-1947, Report no. 6166 and 6517 for 1948, Report no. 7034 for 1949, and Report no. 7550 for 1950.
1. Marine borers.

Proceedings of the second annual symposium on water conservation and industrial development, November 19-20, 1952. Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La. 1953. 89p diagrs, drawings, tables Available from Engineering Experiment Station, Louisiana State University, Baton Rouge, La. PB 112362

Contents: - Conservation of water in the kraft pulp and paper industry, by H. W. Gehm. - Capacity of natural waters to assimilate wastes, by Hayse H. Black. - Water conservation in petroleum production, by Thomas M. Winfiele. - Conservation of water in petroleum and petro-chemical industries, by J. E. Miller. - Water usage and conservation in the Louisiana sugar industry, by Arthur G. Keller. - Program for the maximum utilization of Louisiana river basins for industrial development, by Frank J. Coogan. - Plant location as influenced by water resources and waste disposal, by C. R. Lose, III. - Attendance list.
1. Water - Uses 2. Water - Conservation 3. Paper industry - Water pollution 4. Water supply - Contamination 5. Petroleum - Water pollution 6. Pulp - Manufacture - Water pollution 7. Sugar industry - Water pollution 8. Waste, Liquid - Disposal 9. Plants - Effect of soil pollution 10. Industrial development - Water pollution 11. L EES B 38.

Production control. Report of a visit to the U. S. A. in 1951 of a specialist team on production planning and control. Anglo-American Council on Productivity. Oct 1953. 142p photos, map, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.25. PB 106481

1. Production control 2. Industry - Organization, Control, etc.

Rapport. France. Direction Genérale des Impôts. Mission aux U. S. A., Oct-Dec 1950. Order separate parts listed below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number for each part ordered.

Fasc. II: Organisation de l'administration fiscale fédérale Américaine (Report, part 2: Organization of the American government fiscal administration). 1950. 23p (Text in French) Microfilm $2.00, Photostat $3.75. PB 112107

1. Finance 2. Taxation.

Fasc. III: L'income-tax fédéral aux U. S. A. Legislation et administrationde cet impot (Report, part III: The federal income tax in the U. S. A. Law and administration of this tax). 1950. 51p (Text in French) Microfilm $2.75, Photostat $7.50. PB 112108

1. Income tax.

Fasc. IV: Droits de mutation fédéraux aux U. S. A. Legislation et administration de ces droits (Report, part IV: Federal transfer taxes in the U. S. A. Law and administration). 1950. 55p tables (Text in French) Microfilm $2.75, Photostat $7.50. PB 112109

1. Gift tax 2. Inheritance tax 3. Taxation - Assessment.

Fasc. V: Impots fédéraux indirects aux U.S.A. Legislation et administration de ces impots (Federal indirect taxation in the U. S. A. Law and administration of these taxes). 1950. 80p tables (Text in French) Microfilm $3.50, Photostat $10.00. PB 112110

1. Taxation, Indirect.

Fasc VI: Le recouvrement des impots federaux aux U. S. A. Legislation et administration (Report, part VI: Collection of federal taxes in the U. S. A. Laws and administration). 1950. 24p (Text in French) Microfilm $2.00, Photostat $3.75. PB 112111

1. Taxation - Collection.

Fasc. VII: Le contrôle fiscal aux U. S. A. (Report, part 7: Fiscal control in U. S. A.) 1950. 63p graphs, tables (Text in French) Microfilm $3.00, Photostat $8.75. PB 112112

1. Taxation - Collection.

Fasc. VIII: Réformes de la legislation et de l'administration des impots francais suggérées á la suite des observations faites aux U. S. A. (Report, part VIII: Reforms in the French tax laws and administration recommended as a result of observations made in the U. S. A.) 1950. 51p (Text in French) Microfilm $2.75, Photostat $7.50. PB 112113

1. Taxation - France.

Rapport par la Mission Francaise des Travaux Publics sur son voyage aux U. S. A. Avril-May 1950 (Report of the French Mission on Public Works on its visit to the U. S. A. April-May 1950). Mission Française des Travaux Publics aux Etats-Unis, 1950. 1950. 143p photos, maps, tables (Text in French) Available from Mr. Georges Paques, Director of Public Relations, Association Française pour l'Accroissement de la Productivité, 11 rue Faubourg St. Honoré, Paris, France. PB 112100

Enquête pour l'accroissement de la productivité. 1. Public works 2. Labor and laboring classes 3. Economic conditions 4. Association Française pour l'Accroissement de la Productivité, Paris 5. Federation Nationale des Travaux Publics, Paris.

Report of the Fire Research Board with the Report of the Director of Fire Research for the year 1952 and a survey of the first six years 1947-1952. Gt. Brit. Dept. of Scientific and Industrial Research and Gt. Brit. Fire Offices' Committee. 1953. 79p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.75. PB 110982

S. O. code no. 47-151-0-52.
1. Fire protection - Research - Gt. Brit. 2. Fire protection - Materials - Gt. Brit. 3. Fires - Research - Gt. Brit.

Report of the Hydraulics Research Board with the Report of the Director of Hydraulics Research for the year 1952. Gt. Brit. Dept. of Scientific and Industrial Research. Hydraulics Research Board. 1953. 74p photos, drawings, col maps (2 fold), diagrs, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.40. PB 110914

Sir William Halcrow, Chairman. S. O. code no. 47-172-0-52. Color in maps will not reproduce.
1. Hydraulic engineering - Research - Gt. Brit. 2. Hydraulic systems - Research - Gt. Brit.

Report of the Mechanical Engineering Research Board, with the Report of the Director of Mechanical Engineering Research for the year 1952. Gt. Brit. Dept. of Scientific and Industrial Research. Mechanical Engineering Research Board. 1953. 68p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 110986

S. O. code no. 47-163-0-52.
1. Mechanical engineering - Research - Gt. Brit.

Status of research in American geography. National Research Council. Division of Geology and Geography. Contract N7onr-29124. Order separate parts listed below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number for each part ordered.

Committee on field techniques, by Charles M. Davis, Fred W. Foster, P. E. James, C. F. Jones, Richard F. Logan, Robert S. Platt, Joseph A. Russel, Kirk Stone. 1953. 26p Microfilm $2.00, Photostat $3.75. PB 112042

1. Geographical research 2. Mapping - Technique 3. Cartography.

Committee on political geography, by Richard Hartshorne, Jan O. M. Broek, P. E. James, C. F. Jones, Stephen B. Jones, George Kish, Robert S. Platt, Malcolm Proudfoot, S. Van Valkenburg. 1953. 55p Microfilm $2.75, Photostat $7.50. PB 112043

1. Geopolitics 2. Geographical research.

Committee on urban geography, by Harold M. Mayer, Robert E. Dickinson, Chauncy D. Harris, P. E. James, C. F. Jones, Clyde F. Kohn, Robert E. Murphy, Victor Roterus, Edward L. Ullmann. 1953. 40p Microfilm $2.25, Photostat $5.00. PB 112045

1. Geographical research.

Geographic catography, by A. H. Robinson, W. E. Davies, P. E. James, C. F. Jones, O. M. Miller, Erwin Raisz. 1952. 41p Microfilm $2.50, Photostat $6.25. PB 112041

1. Geographical research 2. Map-projection 3. Mapping - Technique 4. Cartography.

Historical geography, by Andrew H. Clark, Herman R. Friis, Preston E. James, Clarence F. Jones, Dan Stanislawski, J. Russell Whitaker. 1952. 60p Microfilm $2.75, Photostat $7.50. PB 112040

Regional study with special reference to geography, by Derwent Whittlesey, P. E. James, C. F. Jones, S. B. Jones, L. E. Klimm, James Malin, H. H. McCarty, R. S. Platt, Kirk Stone, J. R. Whitaker. 1952. 75p Microfilm $3.50, Photostat $10.00. PB 112044

1. Geographical research.

Soil stabilization, presented at the thirty-second annual meeting, January 13-16, 1953. Highway

Research Board. 1953. 68p photos, diagrs, map, graphs, tables Available from Highway Research Board, National Research Council, 2101 Constitution Avenue, Washington 25, D. C. $.90.
PB 110722

Contents: Properties of lime-flyash-soil compositions employed in road construction, by L. John Minnick and W. F. Meyers. - Soil-cement test-data correlation in determining cement factors for sandy soils, by J. A. Leadabrand and L. T. Norling. - Discussion by D. T. Davidson, A. B. Cornthwaite. - Effectiveness of various soil additives for erosion control, by Louis J. Goodman.

1. Soil stabilization 2. Soil erosion - Control 3. Aggregates, Lime-flyash - Compaction 4. Cements, Soil - Penetration tests 5. Road materials - Binding agents 6. HRB BUL 69.

Soil temperature and ground freezing, presented at the 32d annual meeting, Jan 13-16, 1953. Highway Research Board. 1953. 128p drawings, graphs, tables Available from Highway Research Board, 2101 Constitution Avenue, Washington 25, D. C. $1.80. PB 110820

Contents: Cold-room studies of frost action in soils, by James F. Haley. - Frost design criteria for pavements, by Kenneth A. Linell. - Soil temperature comparison under varying covers, by George A. Crabb, Jr. and James L. Smith. - Calculation of depth of freezing and thawing under pavements, by Harry Carlson and Miles S. Kersten. - Frost action research needs, by A. W. Johnson and C. W. Lovell, Jr.
1. Soils - Temperature 2. Soils - Freezing effects 3. Roads - Surface treatment - Frost damage 4. Frost - Research 5. HRB Bul 71.

Study of the earth's electrical field. Eighth quarterly report for period Feb 1, 1953 to Apr 30, 1953, under Contract no. AF 19(122)467, by David H. Garber. Cornell Aeronautical Laboratory, Inc., Buffalo, N. Y. Jun 1953. 11p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 112157

The purpose of this project is to investigate the earth's electric field and atmospheric electrical conductivity, and to correlate these quantities with meteorological parameters. Present project effort is largely in the instrumentation phase, with emphasis on establishing reliable automatic recording of field and conductivity fluctuations. For 5th report see PB 108441. CAL RA-764-P-8.

Temperature, seepage and turbulence as factors affecting suspended sediment concentration, by James R. Barton, and Maurice L. Albertson. Prepared for Bureau of Reclamation, Denver Federal Center, U.S. Dept. of Interior under Contract no. 12R-19126 through the Colorado A & M Research Foundation. Colorado Agricultural and Mechanical College. Dept. of Civil Engineering, Fort Collins, Colo. Jun 1953. 82p photos, drawings, graphs, tables Available from Colorado Agricultural and Mechanical College, Dept. of Civil Engineering, Fort Collins, Colorado. $1.50. PB 112117

1. Sediment - Deposition 2. Settling tanks 3. Sediment, Suspended - Effect of temperature 4. Sediment, Suspended - Effect of seepage 5. Sediment, Suspended - Effect of turbulence 6. Colorado. Agricultural Experiment Station, Fort Collins, Colorado 7. U. S. Bureau of Reclamation. Denver Federal Center. Report no. CE 53JRB12.

Theoretical behavior of an inelastic material model, by Dan Frederick and M. A. Garcia. Virginia. Engineering Experiment Station, Blacksburg, Va. Jun 1953. 35p diagrs, graphs Available from Engineering Experiment Station, Virginia Polytechnic Institute, Blacksburg, Va. $.25.
PB 112408

Bulletin, Vol. XLVI, no. 8, June 1953.
1. Materials, Inelastic - Stresses - Theory 2. Models, Mechanical - Stresses - Theory 3. Textiles - Mechanical properties - Theory 4. Stresses - Theory 5. VEES 85.

Trafficability and navigability of delta-type coasts, trafficability and navigability of Louisiana coastal marshes. Technical report no. 2: Occurrence and development of mudflats along the Western Louisiana coasts, by James P. Morgan, Jack R. Van Lopik, Lewis G. Nichols. Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La. Apr 1953. 35p photos, maps, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00.
PB 110723

Contract N7onr-35608, Task order NR 038-002.
1. Sediment - Deposition - Louisiana 2. Geology - Louisiana.

Underground storage, by Milton A. Raum and Thomas A. Treglia. U. S. Chemical Corps. Chemical and Radiological Laboratories, Army Chemical Center, Md. Project 4-91-06-001. Order separate parts described below from the Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number for each part ordered.

Third year. Apr 1953. 16p photos Microfilm $1.75, Photostat $2.50. PB 109718
CC CRL R144.

Résumé of three year test program. Apr 1953. 10p Microfilm $1.25, Photostat $1.25.
PB 109719
CC CRL R145.